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Combat Crew

strategic air command

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JUNE 1980

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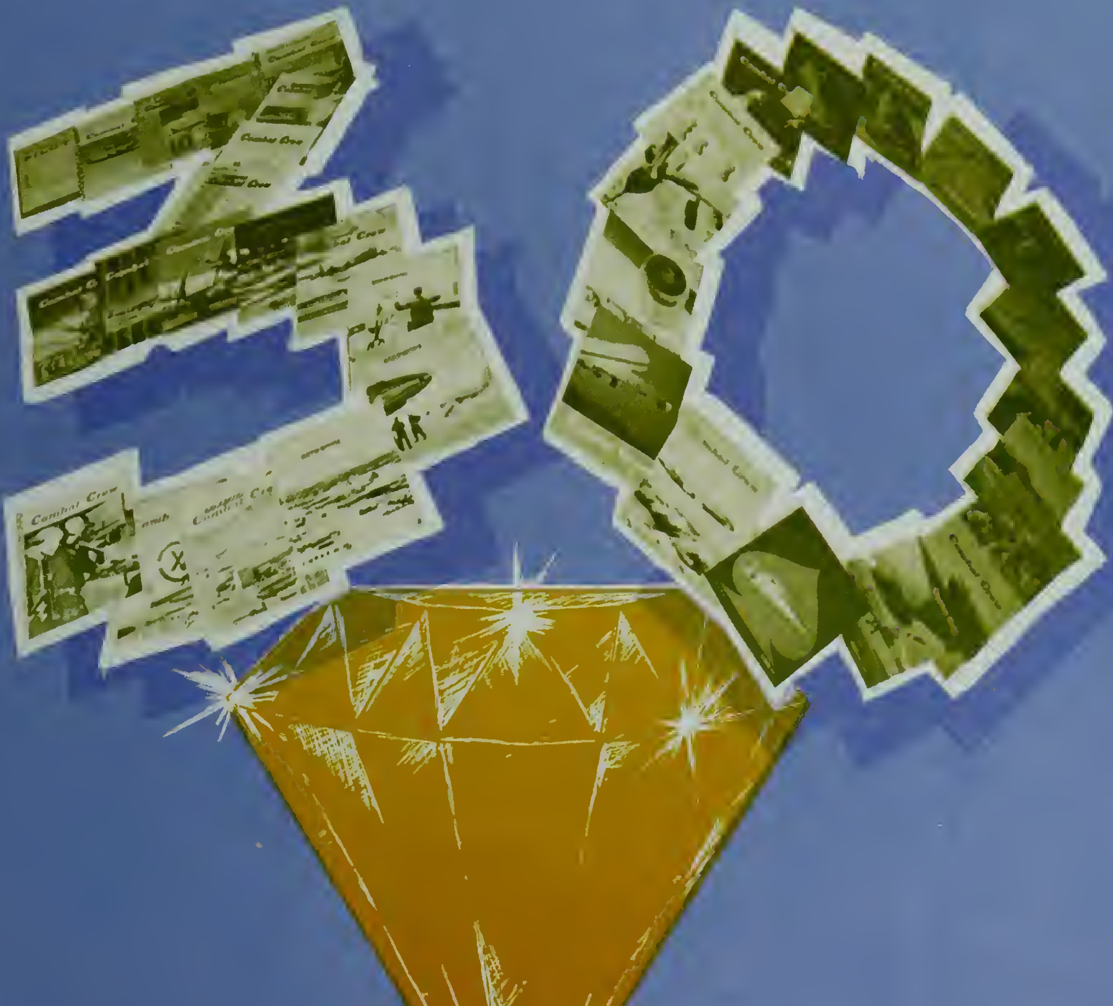

Combat Crew

Magazine of the Strategic Air Command - 30th Year of Publication

GEN. RICHARD H. ELLIS
COMMANDER IN CHIEF, SAC

BRIG. GEN. RICHARD A. BURPEE
Inspector General

COL. RICHARD A. PATRICK
Director of Safety

STAFF

MAJ. STEPHEN J. MILLER
Editor

G. FRANCIS FARRELL
Associate Editor

SSgt. RICHARD L. WALDROOP
Art Editor

MARY JANE ABBOUD
Editorial Assistant

FLARE

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ON OUR COVER

Combat Crew celebrates its 30th anniversary this month. In this issue we pause to reflect on the history of SAC in the hope it will aid us in our journey into the future.

SACRP 127-1 VOL. XXX NO. 6 JUNE 1980
COMBAT CREW is an internal publication of the Strategic Air Command with the sole purpose of promoting safety. The contents of this magazine are informative and not to be considered as directive in nature. Facts, testimony and conclusions of all mishaps printed herein may not be construed as incrimination under Article 31 of the Uniform Code of Military Justice. All names, dates and places used in conjunction with mishap stories are fictitious. Written permission must be obtained from Headquarters, Strategic Air Command, before any material may be reprinted by other than U.S. Air Force organizations. Use of funds for printing the publication has been approved by Hq. USAF, Distribution FX, controlled by IGFC. SAC units submit distribution requests through local PDO. Reader to copy ratio 9:1.

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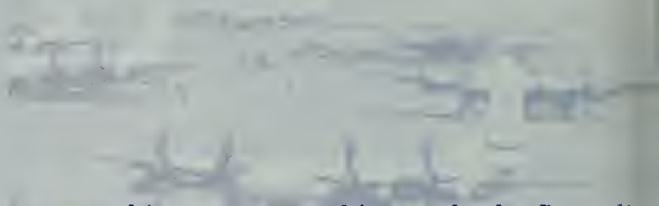
FROM THE CINC

Let's Get Ou



Thirty years ago this month, the first edition of what became known as COMBAT CREW rolled off the presses. Five months later, regular publication was approved by General LeMay and the monthly magazine became a permanent part of a rapidly growing command.

In June of 1950, SAC was just over four years old, the Air Force as a separate service less than three, and there wasn't a jet bomber or missile to be found anywhere in the Command. The first operational B-47 (50-008) was 16 months away and flying crews would wait five years for 52-8711, our first B-52, and seven years for 55-3127, our first KC-135, to touch down on a SAC runway. ICBMs were still a part of man's dreams — the first ATLAS would not reach alert status until three months before the end of the decade.

During the 1950s, SAC's strength climbed over 200 percent in numbers of operational aircraft and people. New records were set, most prop aircraft were replaced with jets and an all out effort was launched to build America's first ICBM force.

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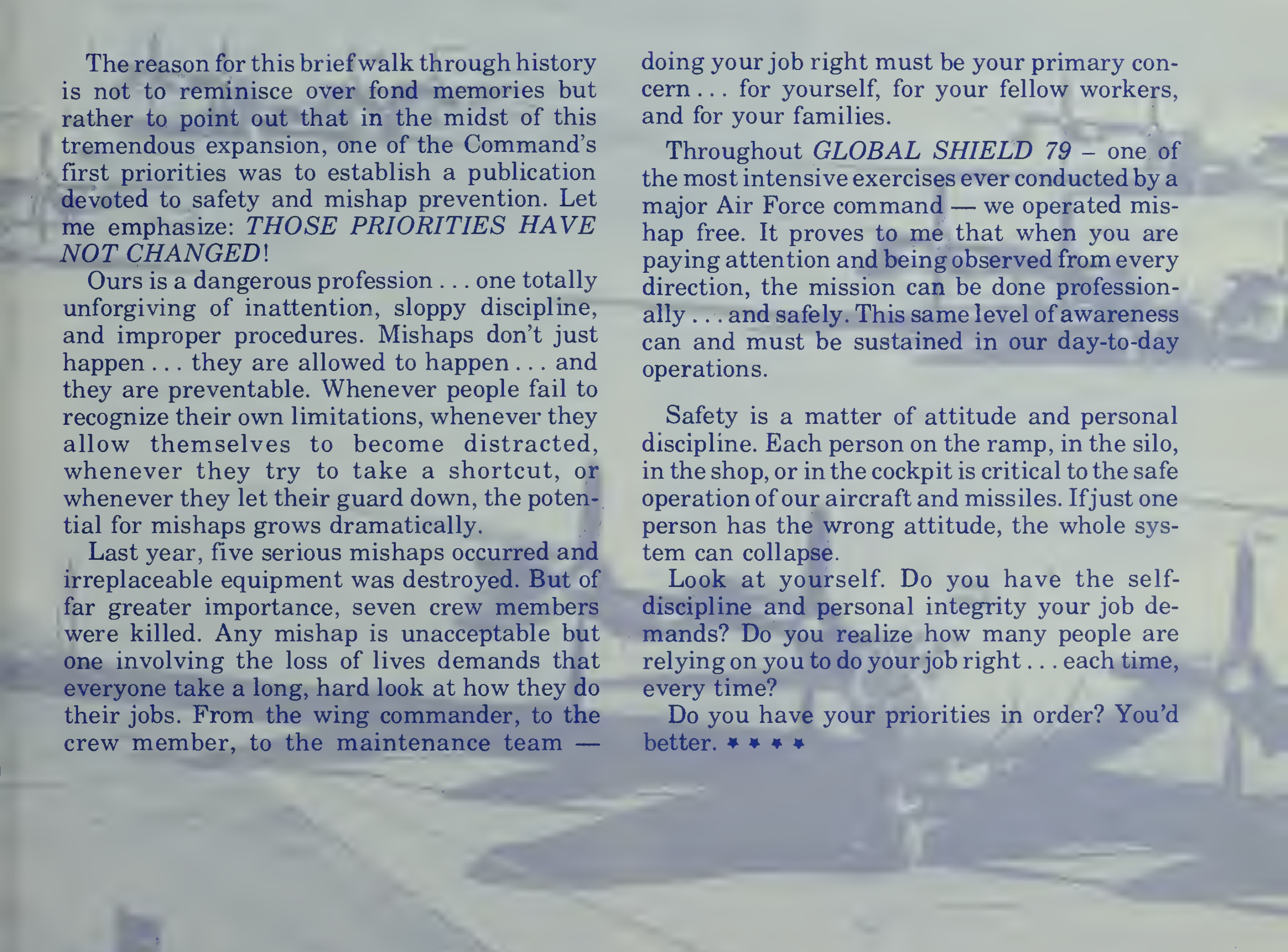
Gen. R. H. Ellis
Commander in Chief, SAC

Priorities In Order



The reason for this brief walk through history is not to reminisce over fond memories but rather to point out that in the midst of this tremendous expansion, one of the Command's first priorities was to establish a publication devoted to safety and mishap prevention. Let me emphasize: *THOSE PRIORITIES HAVE NOT CHANGED*!

Ours is a dangerous profession . . . one totally unforgiving of inattention, sloppy discipline, and improper procedures. Mishaps don't just happen . . . they are allowed to happen . . . and they are preventable. Whenever people fail to recognize their own limitations, whenever they allow themselves to become distracted, whenever they try to take a shortcut, or whenever they let their guard down, the potential for mishaps grows dramatically.

Last year, five serious mishaps occurred and irreplaceable equipment was destroyed. But of far greater importance, seven crew members were killed. Any mishap is unacceptable but one involving the loss of lives demands that everyone take a long, hard look at how they do their jobs. From the wing commander, to the crew member, to the maintenance team — doing your job right must be your primary concern . . . for yourself, for your fellow workers, and for your families.

Throughout *GLOBAL SHIELD 79* – one of the most intensive exercises ever conducted by a major Air Force command — we operated mishap free. It proves to me that when you are paying attention and being observed from every direction, the mission can be done professionally . . . and safely. This same level of awareness can and must be sustained in our day-to-day operations.

Safety is a matter of attitude and personal discipline. Each person on the ramp, in the silo, in the shop, or in the cockpit is critical to the safe operation of our aircraft and missiles. If just one person has the wrong attitude, the whole system can collapse.

Look at yourself. Do you have the self-discipline and personal integrity your job demands? Do you realize how many people are relying on you to do your job right . . . each time, every time?

Do you have your priorities in order? You'd better. ✶ ✶ ✶ ✶

Combat Crew

strategic air command

JUNE 1950 **** June 1980

Maj Stephen J. Miller, Editor, and SSgt Richard Waldroop, Art Director, discuss last minute changes to a future issue of Combat Crew.

Photos by SSgt Peter Des Jarlais

Two captains in their well-worn flying suits moved to the head of the coffee line in the snack bar, filled their cups and headed for a nearby table. As they stirred their coffee, one casually said to the other, "I hear you had a close one on your mission the other night; what happened?"

"Well, it wasn't really as bad as it sounds," replied the other; "but it could have been. As soon as we lifted off, bright flashes lit up my front window. I knew it wasn't lightning because it was only partly cloudy, so I reached down and turned off the windshield anti-ice and defog switch; this did the trick. Those flashes were real distracting especially at a critical time."

"What made you think of the windshield anti-ice and defog switch?" asked his friend.

"I wasn't completely sure," was the reply, "but I remembered a similar situation being covered in *Combat Crew* magazine not too long ago. So, it was the first thing I thought of."

NOT UNUSUAL

A remote instance? Not at all. For the past 30 years, *Combat Crew,* SAC's safety magazine, has been aiding in mishap prevention. Pilots, aircrew members, missile crew members and maintenance technicians have personally been helped by an article or safety hint that stuck in their mind.

The magazine was first published in June 1950 at the direction of Gen Curtis E. LeMay, then CINCSAC. In November of that year, the magazine was retitled *"COMBAT CREW"* from its original title of " Professional Pilot," and has been going strong ever since.

Then as now, *Combat Crew* has been devoted to mishap prevention and solution, recognition of outstanding crews and maintenance people, and outstanding safety records by units. Today, over 100,000 people throughout SAC, other Air Force commands, and DOD components read the magazine each month.

EARLY DAYS

Combat Crew is the oldest Air Force command safety publication. It was first published as a supplement to the Air Force Safety magazine (Aerospace Safety). Only this magazine and the TIG Brief are older continuously printed Air Force safety publications. The magazine is edited in an office in the old hospital building at Offutt AFB. The first office was located in the old Martin-Marietta building at Offutt; later moved to the headquarters building, then in 1966 to its present location. The magazine originally began under the Office of Special Projects, but was soon transferred to the safety directorate, DO, in 1950.

In the early days, funds were provided on a quarterly basis and the staff was never sure whether they would be publishing in the next quarter or not. Today, the magazine is published by the SAC IG headed by Brig Gen Richard A. Burpee, and under the supervision of the Director of Safety, Col Richard A. Patrick. Actual printing of the 8500 copies per month is done through government contract.

The magazine staff of four rely mainly on the articles and ideas contributed by aircrew members, missile crew members, maintenance people, staff personnel and safety people throughout the command. The underlying theme of *Combat Crew* for the past 30 years has been that it belongs to the SAC crewmembers and material should be of interest to them. Of course, the safety theme is also paramount and will continue to be so in the future.

Mr. Gail F. Farrell, Associate Editor, received his 30 year civil service certificate in May from Brig Gen Richard A. Burpee, Inspector General, SAC. Mr. Farrell will complete 20 years with Combat Crew next month.

COMBAT CREW EDITORS

Jun 1950 - Aug 1953	Maj Kermit A. Eggensperger
Sep 1953 - May 1956	Maj Keith M. Garrison
Jun 1956 - Jan 1959	Lt Col Wayne P. Orr
Feb 1959 - Dec 1962	Lt Col Barnett B. Young
Jan 1963 - Aug 1966	Maj Joseph C. Morrison
Sep 1966 - Jul 1970	Lt Col Robert T. Howard
Aug 1970 - Nov 1973	Maj Robert J. Peisher
Dec 1973 - Jul 1975	Lt Col William P. Hurn
Aug 1975 - Jul 1978	Lt Col Richard W. Blatter
Aug 1978 - Jun 1980	Maj Stephen J. Miller

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Jun 1950 - Sep 1950	MSgt Robert McEnery — man. ed.
Nov 1950 - Sep 1953	SSgt H. L. Gilmore — man. ed
Feb 1951 - Jun 1951	MSgt James Stokes — writer
Aug 1951 - Dec 1957	Dave Karten — ass't ed.
Oct 1953 - Aug 1955	TSgt A. S. Duffin — man. ed.
Sep 1955 - Nov 1956	MSgt J. A. Tannorome — man. ed.
Dec 1956 - Nov 1957	MSgt John McDonald — man. ed
Jan 1957 - Dec 1965	Margaret Dinnen — ed. ass't
Mar 1957 - Dec 1960	Norman Noble — ass't ed.
Jun 1959 - Sep 1961	TSgt Glen E. Juergens — man. ed.
July 1960 - present	Gail F. Farrell — ass't ed.
Jun 1961 - Jun 1962	Don L. Hoxie — ass't ed.
Oct 1961 - Apr 1964	MSgt John Carlyle — man. ed
Feb 1966 - present	M. J. Abboud — ed. ass't

ART DIRECTORS & ARTISTS

Jun 1950 - May 1951	1Lt A. W. J. Grant — artist
Dec 1950 - Feb 1952	1Lt F. E. Drake — art ed.
Jun 1951 - Aug 1953	1Lt. J. L. Morin — art ed.
Mar 1952 - Nov 1952	SSgt L. E. Gross — artist
Dec 1952 - Jun 1953	SSgt James Sargent — artist
Aug 1953 - Jun 1956	A2C Ralph Hammer — artist
Sep 1955 - Jun 1957	1Lt. L. R. Mullin — art ed.
Jun 1956 - Nov 1957	MSgt Lawson Thomas — artist
Jun 1957 - Jul 1964	Capt George N. Winkler — art ed.
Dec 1957 - Feb 1962	MSgt John (Jake) Schuffert — artist
Feb 1962 - Apr 1963	A2C Ned T. Melden — artist
May 1963 - Dec 1967	TSgt Wayne Cherry — artist
Jul 1965 - Sep 1968	SSgt Billie C. Vickery — artist
Oct 1968 - Jan 1972	MSgt W. A. Kirkpatrick — artist
Oct 1971 - Apr 1972	MSgt C. F. Barrett — art ed.
Dec 1971 - Dec 1976	Sgt Wayne J. Sealy — artist
Jan 1976 - Mar 1979	SSgt Gerald Moriarty — art ed.
Apr 1979 - present	SSgt Richard L. Waldroop — art ed.

30 YEARS of Combat Crew Flying

Maj Stephen J. Miller
Editor

IN June 1950, when SAC flying crewmembers first began reading Combat Crew magazine, they were flying a wide variety of aircraft. At that time most of them were recips including the B-36, B-29, B-50, KB-29, RB-36, RB-50, RB-29, C-82, C-97 and C-124. Thirty years ago some SAC pilots were known as "jet jockeys" and were flying the RB-45 and F-84. Yes, in that period of SAC's distinguished history, there were fighter pilots.

In 1950, the Korean War was heating up and SAC was tasked to provide strategic bombing support as well as fighter escort and reconnaissance. The 22d and 92d Bomb Groups with their B-29s deployed and joined the 19th Bomb Group at bases in Japan. The 31st Strategic Reconnaissance Squadron equipped with RB-29 and F-84s from the 27th Fighter Escort Wing joined in the SAC effort. By the end of 1950, the 98th and 307th Bomb Groups were also seeing action. The first SAC Korean bombing mission was on 13 July 1950, when 50 B-29s struck targets at Wonsan, an important North Korean port.

By the time the fighting ended in Korea, SAC B-29s and RB-29s had flown 21,328 effective sorties including 1955 reconnaissance and 797 psychological warfare sorties. 167,100 tons of bombs had been dropped on all types of targets — close support, interdiction and strategic.

The Korean War was not the only area where SAC was directing its attention. The country was building its nuclear forces, especially delivery capabilities. Improved long range jet bombers were fast becoming a reality. The first B-47 (No. 50-008) was delivered to the 306th Bomb Wing at MacDill AFB on 23 Oct 1951. This was to be the site of B-47 crew training. Col Michael N.W. McCoy piloted the aircraft which became known as "the Real McCoy." The first KC-97E had arrived at MacDill three months earlier. These two aircraft would be combined to provide the range needed for SAC's nuclear capabilities.

The KC-97, however, was not the first SAC tanker. The KB-29 was used in prior years. The first KB-29BP with the newly developed flying boom was delivered to the 97th BW, Biggs AFB on 1 Sept 1950. Thus, refueling as SAC flyers practice it today became a reality.

Also, in 1950, the reconnaissance fleet was bolstered with the arrival of the RB-45s at Barksdale's 91st SRW. SAC's Class A flying safety rate in 1950 was not too impressive. The command recorded a rate of 40.6 mishaps per 100,000 hours of flying, but the rates were steadily improving — a positive sign.

With the increasing numbers of aircraft being assigned to SAC came the addition of new bases. By the end of 1951, SAC wings were added at Barksdale, Carswell, Davis-Monthan, Fairchild, Forbes, Lake Charles, Lockbourne, MacDill, March, Travis, and Walker. Also support flying at Campball, Limestone, Gray, Sedalia, Smokey Hill and Stead was on-going. Some of the names becoming familiar to SAC personnel by the mid-fifties were Larson, Homestead, Dyess, Loring, Mountain Home, Dow, Pinecastle, Great Falls, Westover, Plattsburgh, Portsmouth, Lincoln, Ellsworth and Altus.

Support flying at all SAC bases was an important element of the SAC mission. There were four strategic support squadrons flying C-124s located at Biggs, Castle, Barksdale, and Ellsworth. Each base combat support group provided additional administrative support flying using propeller driven aircraft such as the C-82, C-97, C-47, C-54, C-45, T-6 and T-11.

The year 1955, marked the first year that Combat Crew magazine's Safety Hall of Fame appeared and also marked the delivery of the first B-52B. Twenty-five years ago this month aircraft number 52-8711 was delivered to the 93BW, Castle AFB on 29 June 1955 and the 4017 CCTS was established to specifically train B-52 crewmembers. The 42d BW, Loring AFB, and the 99th BW, Westover AFB, were the next two operational B-52 bases.

Other aircraft to enter SAC's inventory about this time were the RB-57 in May 1956, the C-119 and the F-101. The first KC-135 was delivered to Castle's 93d BW on 28 June 1957 and others were soon in operation at Loring and Westover. Thus, SAC's bomber/tanker fleet for the future was taking shape.

The recce mission also had a tremendous boost in 1957 with the delivery of the first U-2 to the 4080th SRW, Laughlin AFB. This addition of a single engine jet aircraft came at a time when SAC was phasing out its strategic fighter wings. On 1 July 1957, six fighter wings of F-84s were transferred to TAC leaving only the F-86 in the SAC inventory.

Another significant event in SAC's history occurred on 12 Feb 1959 when Capt Leland H. Neville closed the mixture controls and brought to an end "the era of the peacemaker." The last B-36 had proved itself as a nuclear deterrent even though it had never dropped a bomb in anger. Of particular note was the flying safety

Continued on Page 13

1950 SAC Flying Wings

Barksdale	301 BW & 91 SRW
Biggs	97 BW
Bergstrom	12 & 27 FEW
Camp Carson	3904 CW
Carswell	7 BW
Castle	93 BW
Davis-Monthan	43 BW
Fairchild	92 & 98 BW
Hunter	2 BW
MacDill	306 & 307 BW
March	22 BW
Offutt	3902 ABW
Ramey, P.R.	55 SRW
Rapid City	28 SRW
Travis	9 BW & 5 SRW
Turner	31 FEW
Walker	509 BW

Two SAC B-52 missions were flown which once again emphasized the global capability of SAC and how safety in planning and execution is paramount to mission success. These missions were completed more than 23 years apart as we look . . .

FROM POWER FLIGHT 57 TO GLOBAL FLIGHT 80

THE SECOND TIME AROUND

Maj William H. Thurston
410th BMW, K. I. Sawyer AFB

The Colonel pulled the cover off the map in the contingency plans briefing room at HQ SAC and said, "Here's the mission."

Someone whispered, "They've got to be kidding!"

We were amazed at the length of the mission the staff had in mind. On the map was a flight path originating at our home station, K.I. Sawyer AFB, proceeding east to the Indian Ocean for a "Busy Observer" sea surveillance mission, and continuing east for landing at Sawyer.

It had been done before; in January 1957, three SAC B-52s from Castle AFB completed a nonstop, around-the-world flight. Their mission was to demonstrate SAC's ability to reach targets anywhere in the world and return. That was more than 23 years ago, and since then the B-52 has gained a few wrinkles and a lot of flying hours. Still, she can put more bombs on target than any other aircraft, and can do it anywhere in the world in a matter of hours.

Crewmembers of the second B-52 in the around-the-world flight are, kneeling from L-R: Captains Brent R. Bunch, nav; and Thomas E. Clark, CP. Standing from L-R: Capt James A. McLaughlin, RN; SrA Stephan M. McGinness, gunner; Maj John M. Durham, AC; Capt Michael G. McConnell, IP; and Maj William J. Manley, EWO.

Power Flight 1957

On January 16, 1957, five B-52B's thundered down Castle AFB's runway and lifted off on an operational training mission which would eventually take three of the stratofortresses around the world. The 1300 PST departure of Runner 11 was the beginning of a record setting mission.

Runner 22, the deputy lead aircraft, would not complete the mission due to minor mechanical trouble. Lt Col Ted Skawienski and his crew decided to divert to Goose Bay, Labrador. The mission included two spare aircraft to be flown from Castle AFB to England. So, the unplanned divert of Runner 22 meant that the number one spare aircraft commanded by Maj G. C. Kalebaugh and crew became a primary mission aircraft.

The second spare with Maj Ben H. Clements as pilot landed in England as preplanned. This was the first B-52 to deploy to England.

The three remaining B-52's continued the nonstop flight under the direction of Maj Gen Archie Old, Jr, air commander. As they arrived at the coast of California, the only other hitch in the mission occurred. The B-52 crews were to land at Castle AFB, their home unit, but fog in the local area prevented their recovery. All three crews, including Runner 33 with Capt C. W. Fink as pilot, went on to March AFB.

The mission was planned to be flown in 46 hours and this time was bettered as the lead aircraft, Runner 11, piloted by Lt Col James H. Morris, touched down 45 hours and 19 minutes and 24,235 miles after departure. They had eclipsed the previous time of 94 hours 10 minutes for a nonstop mission set by a B-50 in 1949. Lt Col Morris was also a pilot on the B-50, Lucky Lady II, which set the 1949 record.

The 1957 historic mission which required several refuelings with KC-97 tankers set a record destined to stand until 1980.

That afternoon, we discussed problems inherent in a mission of this length and began to really look at the mission routing. The route consisted of departure from Sawyer to the Northeast, overflight of Canada, the North Atlantic, several European countries, the Mediterranean Sea, to the Indian Ocean for joint activity with U.S. Naval forces, and return to the CONUS via the Indian Ocean, the Strait of Malacca, the South China Sea, and the North Pacific. Five air refuelings would be required, with each aircraft onloading nearly 600,000 pounds of fuel. Refuelings would take place over Eastern Canada, the North Atlantic, the Mediterranean, the Indian Ocean, and the Western Pacific. Mission duration would be 43 hours, depending on winds.

SAC contingency planners developed computerized flight plans for the entire route and gathered the necessary maps, airway charts, and other materials necessary for the mission. It was educational for us to work with an organization with the authority and the expertise of the SAC staff. We were impressed with their thoroughness, but more importantly, with their willingness to adjust the mission to our requirements. For example, several requests for changes in air refueling offloads, track times, and tanker composition were quickly and efficiently coordinated. Every effort was made to get us whatever information we required. As mission planning progressed, we found that we needed to brush up on ICAO flight plans and worldwide HF reporting procedures. In addition, we were briefed on the use of diplomatic clearances for overflight of certain countries.

An ALTRV was completed for the Canadian and Atlantic portions of the flight. The ICAO flight plan then picked up where the ALTRV terminated and took us through the remainder of the route. Fuel curves were drawn up and decision points determined to cover loss of portions or all of an air refueling. Suitable alternates were selected for operational problems or emergencies. Crew rest periods were planned so that selected crewmembers could rest prior to critical periods of flight. Special procedures for contacting and working with the Navy were discussed. Hours were spent learning communications procedures and annotating our crew flight plans with agencies to contact at various points along the route.

The route had to be studied for radar significant checkpoints to be used to update the SRAM CAE inertial navigation system. The Strategic Targeting Intelligence Center provided precise coordinates for the points which would permit updates of position to within a few hundred feet. Celestial shooting schedules were developed for the long overwater portions of the mission should inertial systems fail. Thirteen different JNC and GNC charts were needed to cover the route. The final strip chart, when completed, was over 40 feet long.

After two days, the planning phase was complete, charts had been put together, refueling support had been coordinated, and communications and weather requirements had been finalized. It was time to go home and get ready.

Back at Sawyer the rumors were flying. Security was still tight as no one was to know where we had been. However, everyone had a guess about what we were going to be doing. In fact, one of the hardest parts of this operation was trying to avoid people at home so as to avoid questions, while trying to coordinate mission requirements without discussing the mission. Logistics requirements and aircraft preparation were our first priorities. Our wing commander, Brig Gen Marion F. Tidwell, insured that we received all the support we required. Due to the length of the mission, the five air refuelings and the communications involved, each crew selected an extra pilot and briefed him on the mission. Primary and spare aircraft were thoroughly preflighted the day before scheduled takeoff by the flight crews and maintenance personnel. Hot meals, water jugs, and other items for crew comfort were ordered.

Meanwhile, at SAC, final diplomatic clearances were being coordinated, a worldwide weather briefing was being prepared and passed to Sawyer, and our flight plan was being entered into the computer. When we launched at 0825 and 0826 on 12 March, we were well prepared for the mission.

After all the planning, premission coordination, preflighting, and security, the mission itself was almost anticlimatic. Communications throughout the world was our only major problem. Many areas do not use the UHF radio at all but require VHF for air traffic control. The lack of VHF affected us, especially in the Mediterranean area. At other times we were unable to receive HF Stations for extended periods. We learned to jot down the times as we crossed each filed point and have estimates for the points ahead of us because when radio contact was made, we could never be sure which times they would ask for. We also learned to be flexible, since several countries didn't receive our flight

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Thirty Years of MISSILE HISTORY

Combat Crew Magazine is more than a flying safety magazine. Although flying safety was the reason for the establishment of the magazine, today we also cover the missile crewmembers, their weapon system problems and related safety aspects.

A look back through the last 30 years in the missile area and SAC involvement shows a continued interest in missile development. Work on the Snark missile was progressing during the forties and fifties. But, it wasn't until late in the fifties that missiles were actually under operational control of SAC.

SNARK — the Beginning.

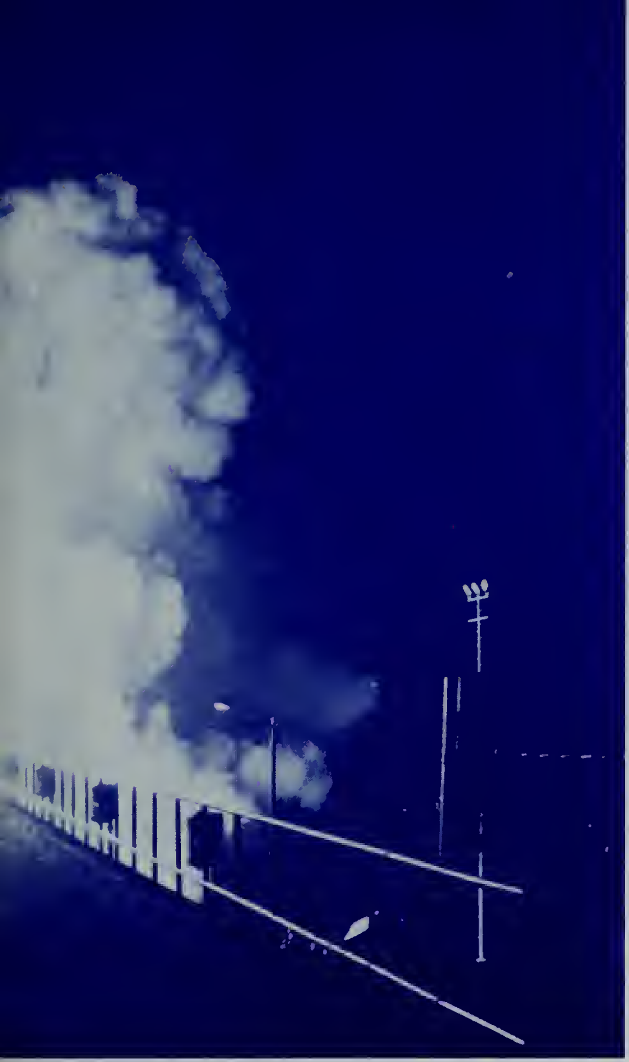
In December 1957, SAC activated its first strategic surface-to-surface guided missile squadron. Although the first operational Snark site was to be in Maine, the 556th Strategic Missile Squadron (SMS) at Patrick AFB, Florida, was activated as the test site and launched the first Snark missile in June 1958.

SAC activated the 702d SMW at Presque Isle AFB, Maine, as its first strategic missile wing in January 1959. The 556th SMS was later assigned to the 702d SMW.

The first Snark was placed on alert in March 1960 and the 702d SMW became fully operational in February 1961. The Snark alert program was short-lived, however, and lasted only four months. It fell victim to obsolescence and marginal military value.

ATLAS — a Great Step Forward. Study and development of the Snark was not the only work being performed in the missile area. Development of both the Atlas and Titan I was progressing through the fifties. The Atlas was deployed in three separate models; the D, E and F. The units, associated models, and activation date are as follows:

No.	Unit		Model	Activation Date
1	576 SMS	Cooke AFB, CA (Later Vandenberg)	D, E, F	1 Apr 58
2	564 SMS	F E Warren AFB, WY	D	1 Jul 58
3	565 SMS	F E Warren AFB, WY	D	1 Dec 58
4	566 SMS (To 549 SMS)	Offutt AFB, NE	D	15 Aug 59 (1 Jul 61)
5	576 SMS	Fairchild AFB, WA	E	1 Apr 60
6	548 SMS	Forbes AFB, KS	E	1 Jul 60
7	549 SMS (to 566 SMS)	F E Warren, AFB, WY	E	1 Oct 60 (1 Jul 61)
8	550 SMS	Schilling AFB, KS	F	1 Apr 61
9	551 SMS	Lincoln AFB, NE	F	1 Apr 61
10	597 SMS	Altus AFB, OK	F	1 Jun 61
11	578 SMS	Dyess AFB, TX	F	1 Jul 61
12	579 SMS	Walker AFB, NM	F	1 Sep 61
13	556 SMS	Plattsburgh AFB, NY	F	1 Oct 61



With the coming of the more improved second generation ICBMs, the Atlas was phased out beginning in 1964 with completion in Apr 1965.

Titan I — The Other Half. The Titan I program was developed parallel with the Atlas as a backup. Operational deployment occurred simultaneously with the Atlas program. With the completion of both programs, SAC would control 54 Titan missiles and over 130 Atlas missiles. The Titan I operational deployment was as follows:

No.	Unit	Base	Activation Date
1	848 SMS (to 724 SMS)	Lowry AFB, CO	1 Feb 60 (1 Jul 61)
2	849 SMS (to 725 SMS)	Lowry AFB, CO	1 Aug 60 (1 Jul 61)
3	850 SMS	Ellsworth AFB, SD	1 Dec 60
4	851 SMS	Beale AFB, CA	1 Feb 61
5	568 SMS	Larson AFB, WA	1 Apr 61
6	569 SMS	Mt Home AFB, ID	1 Jun 61

Progress made in perfecting the second generation ICBMs, Titan II and Minuteman, brought to an end both the Atlas and Titan I programs by June 1965.

THOR and JUPITER — The Intermediates. Both the Thor and Jupiter missiles were intermediate range ballistic missile programs. The deployment concept of these missiles called for overseas basing. Therefore, SAC's role was one of monitor, technical assistance and warhead control. Deployment of the Thor began in 1959 and was completed in April 1960. The Jupiter missile was deployed in the early sixties. Both programs were phased out by the end of 1963 thus ending SAC's involvement in land-based IRBMs.

TITAN II — To Meet the Challenge. The Titan II is a large two-stage, liquid fueled ICBM capable of launch from a hardened silo. This missile incorporated significant improvements over the Titan I. Development of the missile was approved in October 1959 and the present Titan missile force was formed as follows:

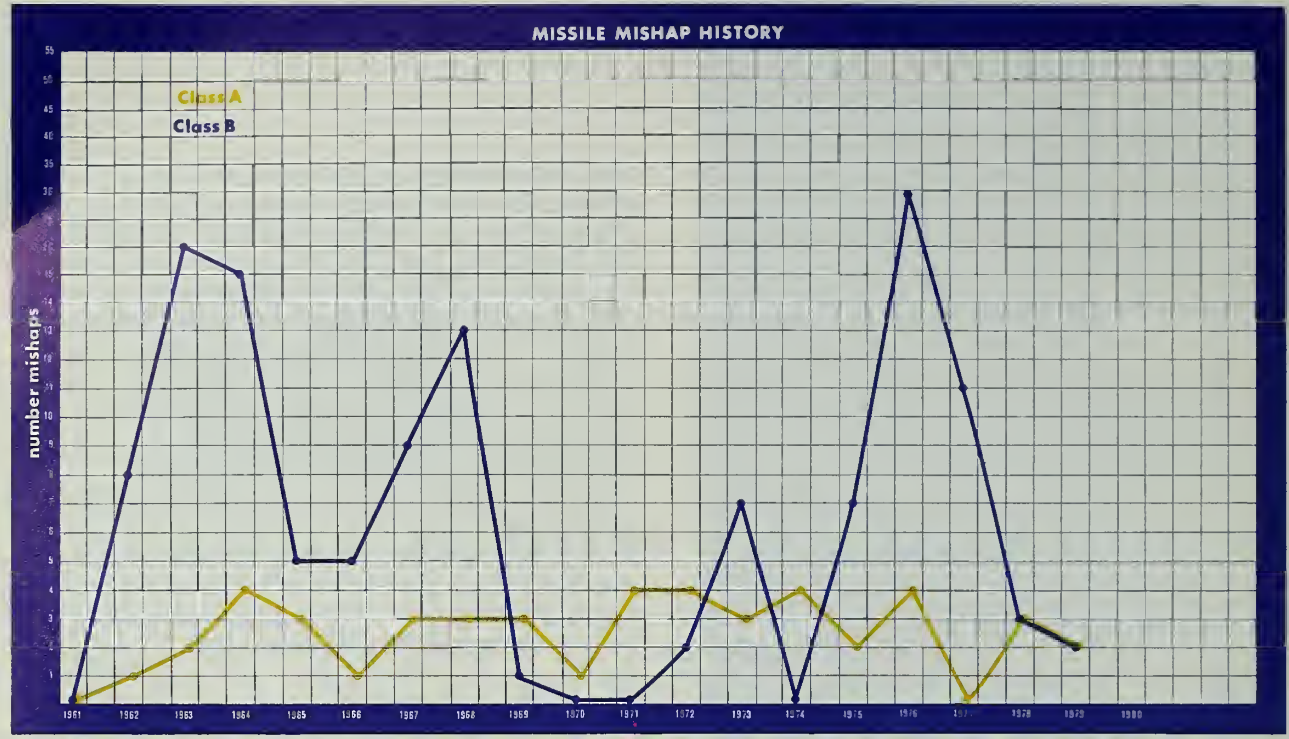
No.	Unit	Base	Activation Date
1	570 SMS	Davis—Monthan AFB AZ	1 Jan 62
2	532 SMS	McConnell AFB, KS	1 Mar 62
3	373 SMS	Little Rock AFB, AR	1 Apr 62
4	571 SMS	Davis—Monthan AFB AZ	1 May 62
5	533 SMS	McConnell AFB, KS	1 Aug 62
6	374 SMS	Little Rock AFB, AR	1 Sep 62

The Titan II, which is now over 18 years old, today is still a viable part of the Air Force missile leg of the Triad.

MINUTEMAN — Standing a Silent Vigil. The Minuteman missile squadrons join the Titan II squadrons in forming SACs missile force of today. With HQ USAF approval Minuteman development began in February 1958.

Minuteman I was deployed in two separate models. Minuteman I, model A's, were deployed at Malmstrom AFB, MT in the 10 SMS (activated 1 Dec 61), 12 SMS (activated 1 Mar 62) and 490 SMS (activated 1 May 62). The Minuteman I model B was deployed as follows:

No.	Unit	Base	Activation Date
1	66 SMS	Ellsworth AFB, SD	1 Jul 62
2	67 SMS	Ellsworth AFB, SD	1 Aug 62
3	68 SMS	Ellsworth AFB, SD	1 Sep 62
4	740 SMS	Minot AFB, ND	1 Nov 62
5	741 SMS	Minot AFB, ND	1 Dec 62
6	742 SMS	Minot AFB, ND	1 Jan 63
7	508 SMS	Whiteman AFB, MO	1 May 63
8	509 SMS	Whiteman AFB, MO	1 Jun 63
9	510 SMS	Whiteman AFB, MO	1 Jul 63
10	319 SMS	F E Warren AFB, WY	1 Oct 63
11	320 SMS	F E Warren AFB, WY	8 Jun 64
12	321 SMS	F E Warren AFB, WY	8 Apr 64
13	400 SMS	F E Warren AFB, WY	1 Jul 64

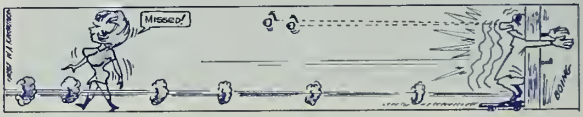


Minuteman I was only the beginning for our present missile force as modernization was inevitable. Four new squadrons of Minuteman missiles would be added in the Minuteman II program. These were the 447 SMS, 448 SMS and 446 SMS at Grand Forks AFB, ND and the 564 SMS at Malmstrom AFB MT. These squadrons were activated between Feb 1965 and April 1966. Another upgrade effort was the Minuteman modernization program which began at Whiteman AFB's 509 SMS in May 1966. SAC now had a total of 1000 Minuteman missiles.

SAC was not through with its modernization efforts, however. The Minuteman III was being perfected as the last Minuteman II was in place. The Minuteman III was in its first silo in Apr 70 at Minot AFB. The force conversion as approved by HQ USAF was completed in Jul 75.

In addition to adding Minuteman III's at Minot, Grand Forks and Malmstrom, SAC also began a silo upgrade program which involved both Minuteman II and III silos. The work performed on these silos increased survivability and safety of the force. Completion was in 1979 after some 300 Minuteman II and all 550 Minuteman III silos were modernized.

The late seventies also saw some software changes which provided improved launch control of the Minuteman IIs. Another capability enhancement program was the command data buffer modification of Minuteman IIIs which increased targeting capabilities.



Combat Crew has followed the many changes in SAC missiles through various articles. The magazine has also provided the safety picture and emphasized the need for missile and nuclear mishap prevention. Figure 1 presents the SAC missile Class A and B safety picture over the years. The missile crews, staffs and maintenance people throughout the command have had a very positive affect on these rates through cross-talk and direct participation in the missile mishap prevention programs.

As SAC enters the decade of the eighties, safety will be an important part of the missile and space systems of the future. To effectively operate these innovative systems, SAC people will need to keep abreast of changes and safety problems associated with day to day operations. Combat Crew, their safety publication, offers one such vehicle for cross-talk throughout SAC.

Editor's note. Material extracted from "From SNARK to SRAM: A pictorial History of Strategic Air Command Missiles," by Dr. E. Michael Del Papa, Office of Historian, HQ SAC, Offutt AFB NE, 21 Mar 76.

30 YEARS OF FLYING

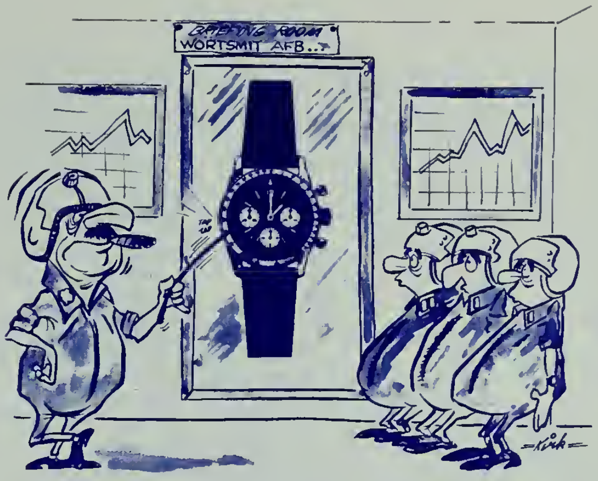
Continued from Page 7

record of the 72d SRW, Ramey AFB. This unit was the only SAC B-36 unit to be major accident free.

SAC, in 1959, had the highest number of tactical aircraft assigned in its history. The number of B-52, B-46, RB-47, KC-97, KC-135, C-124, RB-57, U-2, and F-86 aircraft totaled 3207.

THE SIXTIES — A Time of Change

As the decade of the sixties began, SAC had operations at 62 bases in the CONUS and 20 overseas. The early sixties was a period of change for SAC. The B-58 made its inaugural appearance in August 1960. The 43d BW, Carswell AFB, was the recipient unit and was the designated training wing. Soon the 305th BW, Bunker Hill AFB, became the other operational B-58 unit.



". . . O.K. Crew, we'll rendezvous at 1400 hours — That's when the little hand is on two and the big hand is on twelve!"

1960 SAC FLYING WINGS

Altus	11 BW
Amarillo	4128 SW
Barksdale	4238 SW
Beale	4126 SW
Bergstrom	4130 SW
Biggs	95 BW
Blytheville	97 BW
Bunker Hill	305 BW
Carswell	7 BW & 43 BW
Castle	93 BW
Chennault	68 BW
Clinton-Sherman	4123 SW
Columbus	4228 SW
Davis-Monthan	303 BW
Dover	11 ARS
Dow	4038 SW
Dyess	96 & 341 BW
Eglin	4135 SW
Ellsworth	28 BW
Fairchild	92 BW
Forbes	55 & 40 BW
Glasgow	4141 SW
Grand Forks	4133 SW
Griffiss	4039 SW
Homestead	19 BW
Hunter	2 BW
K I Sawyer	4042 SW
Kincheloe	4239 SW
Larson	4170 SW
Laughlin	4080 SW
Lincoln	98 & 307 BW
Little Rock	70 SRW, 384 BW
Lockbourne	301 & 376 BW
Loring	42 BW
MacDill	306 BW
Malmstrom	4061 ARW
March	320 & 22 BW
Mather	4134 SW
McChord	22 ARS
McConnell	4347 CCTW
McCoy	321 BW
McGuire	305 ARS
Mt Home	9 BW
Minot	4136 SW
Offutt	3902 ABW & 4321 SW
Otis	19 ARS
Pease	509 & 100 BW
Plattsburgh	380 BW & 308 BW
Ramey, P R.	72 BW
Randolph	4397 ARTW
Robins	4137 SW
Schilling	310 BW
Selfridge	4045 ARW
Seymour Johnson	4241 SW
Sheppard	4245 SW
Travis	5 BW
Turner	4138 SW
Walker	6BW
Westover	99 BW & 4050 ARW
Whiteman	340 BW
Wright-Patterson	4043 SW
Wurtsmith	379 BW

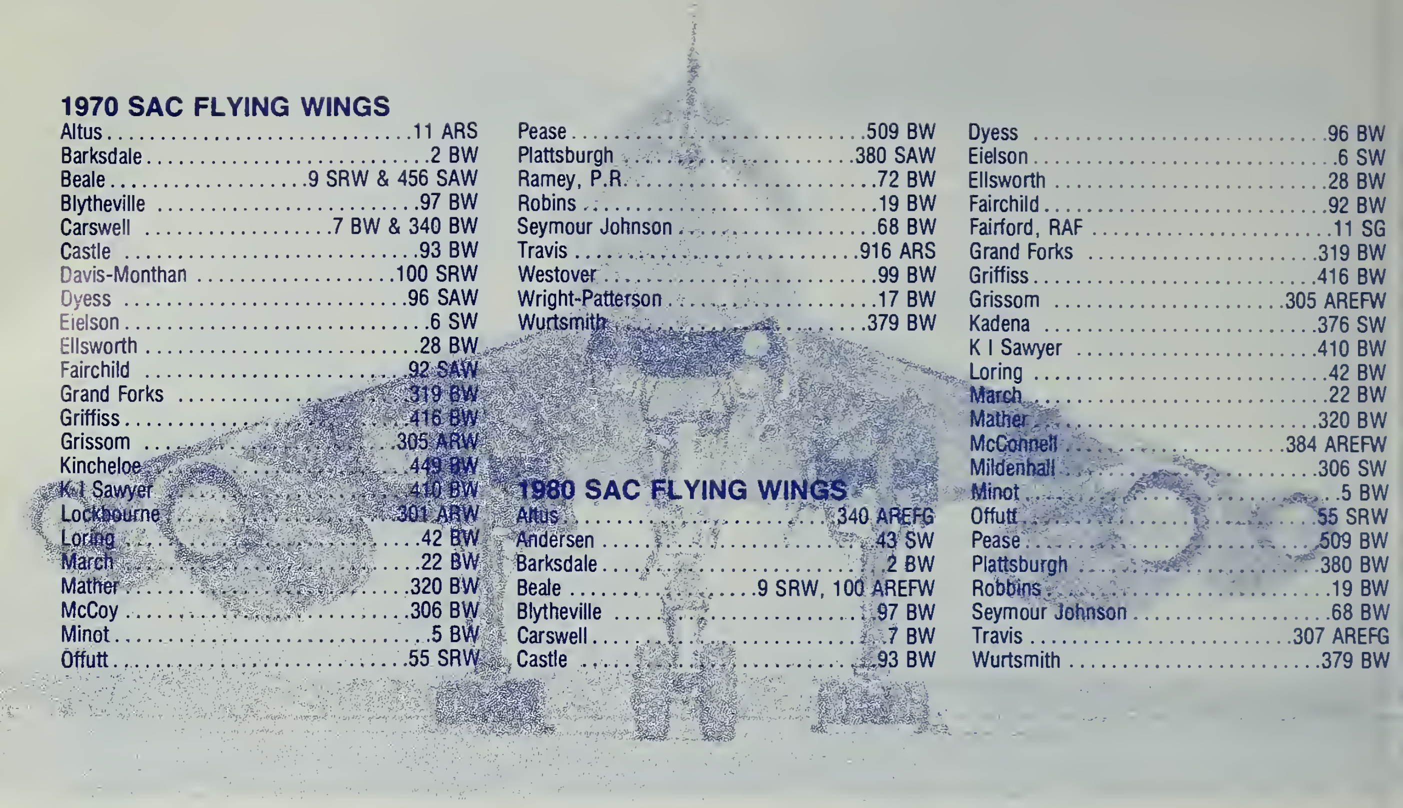
In 1960, the last RB-57 was transferred from SAC to HQ Command and in 1961 all C-124s were transferred to the Military Air Transport Service (MATS). The loss of the C-124, however, did not mean the end of propeller driven aircraft in SAC. The command still used the C-47, C-97, C-131, T-29, L-20, SA-16, U-3, and C-54 in administrative support flying at its many bases.

SAC flyers were also involved in another kind of support flying in the sixties and early seventies which certainly deserves mention. These people were the missile support flyers who used SAC helicopters to transport missile crews, maintenance and security people and material to the missile sites. Early flying was done in the H-19 which was to be replaced by the UH-1F as the SAC missile support helicopter. The H-21, CH-3 and H-43 helicopters were also flown by SAC pilots in other varied support functions.

SAC's Class A mishap rate in 1960 had shown improvement from the fifties. The rate was now at 2.19. For the sixties, the rate would average 1.67.

In 1962 the last B-52, an H model, rolled off the Boeing assembly line for delivery to the 4136 SW, Minot and the last B-58's were delivered to Bunker Hill. This meant a total halt in U.S. bomber production for the first time since 1946. The SAC bomber force numbered 639 B-52's, 880 B-47's, 105 EB-47's, 41 RB-47's and 76 B/TB-58's. These numbers began to dwindle as SAC began to phase out B-47s in the late sixties. Along with the B-47 phaseout the KC-97 was to vanish. The last two KC-97's were flown from Pease and Westover to Davis-Monthan on 21 Dec 1965 and the last two B-47's were flown to Davis-Monthan on 11 Feb 1966 from Pease and Mountain Home.

The sixties also saw many record setting flights in SAC. One was set by the B-58 in May



1970 SAC FLYING WINGS

Altus	11 ARS
Barksdale	2 BW
Beale	9 SRW & 456 SAW
Blytheville	97 BW
Carswell	7 BW & 340 BW
Castle	93 BW
Davis-Monthan	100 SRW
Dyess	96 SAW
Eielson	6 SW
Ellsworth	28 BW
Fairchild	92 SAW
Grand Forks	319 BW
Griffiss	416 BW
Grissom	305 ARW
Kincheloe	449 BW
K I Sawyer	410 BW
Lockbourne	301 ARW
Loring	42 BW
March	22 BW
Mather	320 BW
McCoy	306 BW
Minot	5 BW
Offutt	55 SRW
Pease	509 BW
Plattsburgh	380 SAW
Ramey, P.R.	72 BW
Robins	19 BW
Seymour Johnson	68 BW
Travis	916 ARS
Westover	99 BW
Wright-Patterson	17 BW
Wurtsmith	379 BW

1980 SAC FLYING WINGS

Altus	340 AREFG
Andersen	43 SW
Barksdale	2 BW
Beale	9 SRW, 100 AREFW
Blytheville	97 BW
Carswell	7 BW
Castle	93 BW
Dyess	96 BW
Eielson	6 SW
Ellsworth	28 BW
Fairchild	92 BW
Fairford, RAF	11 SG
Grand Forks	319 BW
Griffiss	416 BW
Grissom	305 AREFW
Kadena	376 SW
K I Sawyer	410 BW
Loring	42 BW
March	22 BW
Mather	320 BW
McConnell	384 AREFW
Mildenhall	306 SW
Minot	5 BW
Offutt	55 SRW
Pease	509 BW
Plattsburgh	380 BW
Robbins	19 BW
Seymour Johnson	68 BW
Travis	307 AREFG
Wurtsmith	379 BW

1961 when this highspeed bomber flew at a dash speed of 1,048.68 mph between Paris and Washington and 1,089.93 mph between New York and Paris. On 7 Jan 1966, however, a new aircraft would appear which would be capable of setting many speed records for SAC. The SR-71 was delivered to SAC's 4200 SW, Beale AFB.

SAC enters SEA — 1964.

By June 1964, SAC KC-135 tankers were engaged in refueling support for tactical fighters in SEA. The operation was known as "Yankee Team." The initials "YT" soon came to stand for Young Tiger for many SAC tanker crews during the next nine years.

The first refueling of a tactical fighter mission in direct support of SEA came on 9 June 1964 over Laos. Prior to this time, tankers had only been used for ferry support movements under operation Lima Mike.

TAC and PACAF had their own assigned KC-97 and KB-50 tankers. The use of these aircraft had kept SAC's 135's out of action, however, by the early sixties SAC had been designated the tanker single manager worldwide and soon the KC-135 was the tanker for SEA.

Tanker support during SEA came from bases such as Kadena, Clark, Ching Chuan Kang, U-Tapao, Andersen, Korat, Don Mung and Takhli. Crews TDY to these bases would fly 194,687 sorties transferring 8,963,700,000 pounds of fuel from June 1964 through mid-August 1973.

SAC Bombers in Action

A Presidential decision to use B-52's in SEA was communicated through the JCS to all units concerned on 11 Feb 1965, thus the beginning of operation ARC LIGHT. The 320th and 7th Bomb Wings immediately deployed with B-52F's to Andersen. Preparations began for the first B-52 ARC LIGHT bombing mission which occurred on 18 Jun 1965.

The 454 BW, Columbus AFB, soon joined those units and began the TDY rotation of wings, cadre and crews to the western Pacific. The bombing efforts would last until August 1973 and the last of the forces involved would not return until November of that year.

For people and airframes, SEA operations would be a grueling test. For the crewmembers, maintenance and support people and their families it means six-month TDYs with little time between trips. For the airframes, it means missions of up to 12 hours at maximum loads.

The B-52 effort in Southeast Asia reached its peak with the buildup of forces in 1972. The B-52Gs were added to the B-52D fleet under operation Bullet Shot. Everything was building toward one of the most significant bombing achievements in the eight years of SEA involvement: Linebacker II. This campaign was an 11-day concentrated bombing effort against North Vietnam targets in December 1972. B-52s flew 729 sorties dropping over 15,000 tons of bombs in heavily defended areas with losses at 15 B-52s. The efforts of all involved reflected the true professionalism of SAC people.

The B-52 and KC-135 were not the only SAC aircraft to operate in SEA. Reconnaissance crews flew many important intelligence gathering missions. Their aircraft included the RB-47, U-2, SR-71, RC-135 and EC-135.

SAC was tasked to provide a viable nuclear force all during the demanding involvement in SEA. To bolster the nuclear forces, the FB-111A was procured. On 8 October 1969, the first FB-111A, was delivered to the 340th Bomb Group, Carswell AFB. This new bomber would become operational at Pease and Plattsburgh in 1970.

THE SAC SEVENTIES

SAC entered the seventies as nearly an all-jet tactical force. Crews were flying B-52, KC-135, FB-111A, CH-3, DC-130, U-2, SR-71, and RC/EC-135 aircraft. SAC had far fewer bases than in 1960, but retained a viable deterrent force. Support flying was provided by aircraft which included UH-1, T-38, T-39, T-29, C-47, U-1A, C-54, C-118, C-97, and C-135s.

The years 1970 and 1971 saw the last flights of the B-58 (in 1970) and the C-47. On 7 July 1971, SAC's last C-47 was flown from Blytheville to a museum in Alabama, thus ending over 25 years of Gooney Bird support. By the mid-seventies, all support aircraft, except C-135s, were turned over to MAC. SAC also flew DC-130 drone-carrier aircraft and CH-3 drone retriever helicopters for several years at the 100th SRW, Davis-Monthan. But by the mid-seventies, the drone program had been transferred to TAC.

The only new aircraft to be added to SAC's inventory during the seventies was the E-4A. On 1 November 1975, the 1ACCS was assigned to the 55th SRW, Offutt AFB. SAC crews were soon flying the E-4A in direct support of the JCS National Emergency Airborne Command Post.

Pilots from the 9th SRW, Beale, were involved in setting seven new world absolute and class speed and altitude records. SR-71 flights were made on 27 and 28 July 1976 over selected courses. The official records included 2,193.64 mph over a 15,125 km straight course, 2,092.29 mph over a 1000 km closed circuit, speed over the same 1000 km course with 1000 kg payload, 85,069-ft altitude in horizontal flight, and world absolute speeds over straight and closed circuits as well as world absolute altitude in horizontal flight.

As the seventies came to a close, SAC completed a transfer of some KC-135s to ANG and AFRES forces. These units would be SAC-gained in event of a national emergency. The 16 ANG and AFRES units work closely with SAC to keep a high state of readiness.

In 1979, the entire command participated in an exercise designed to test its capabilities. At the direction of General Ellis, CINCSAC, all units participated in a challenging endeavor nicknamed Global Shield. The outstanding results of the exercise were a tribute to all SAC personnel.

A highlight of the seventies Class A aircraft mishap rate was the fact SAC achieved the lowest rate in its history in 1978. The 0.27 rate earned SAC the Secretary of the Air Force Safety Award and the Maj Gen Benjamin D. Foulois Memorial Trophy. Through the seventies, SAC had a 0.99 average Class A mishap rate.

THE 1980's
A Decade of Importance

As SAC entered the eighties, the command's aircraft included the B-52, KC-135, FB-111, RC/EC-135, U-2, SR-71, T-38 and E-4A. Crewmembers who fly these aircraft are faced daily with changing and challenging missions.

General Ellis, CINCSAC, in his editorial in the January 1980 issue of Combat Crew, stressed the importance of this new decade and gave some indication of the new aircraft crews could expect to fly. Those include the TR-1, KC-10 (in production), KC-135RE, E-4B (now operational) and others still now being considered.

History surely will be made by SAC flyers no matter what direction the forces take. Crews will be tasked to fly their missions in as safe a manner as possible. We at Combat Crew hope to remain an active part in the safety role of SAC's history.

★ ★ ★ ★

Editor s Note:

Some material extracted and special thanks to the following sources:

1. "The Development of Strategic Air Command, 1946-1973," by John T. Bohn, SAC Historian, HQ SAC, Offutt AFB NE, 19 Sep 74.
2. "SAC Tanker Operations in the Southeast Asia War," Charles K. Hopkins, HQ SAC, Office of Historian, 1979.
3. "Linebacker II: A View from the Rock," Brig Gen James R. McCarthy and Lt Col George B. Allison, AWC, Maxwell AFB, 1979.
4. All the contributors to Combat Crew for the past 30 years

CINCSAC'S

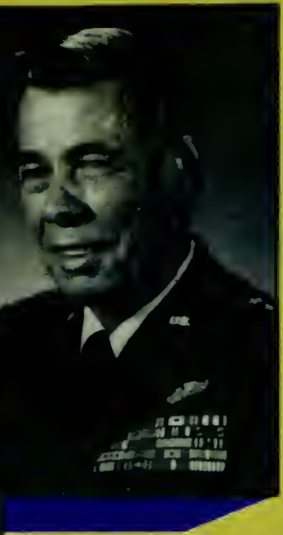
Gen Curtis E. LeMay
Oct 1948 - Jun 1957

Gen Thomas S. Power
Jul 1957 - Nov 1964

Gen John D. Ryan
Dec 1964 - Jan 1967

Gen Joseph J. Nazzaro
Feb 1967 - Jul 1968

During 30 Years



Gen Richard H. Ellis
Aug 1977 - present

Gen Russell E. Dougherty
Aug 1974 - Jul 1977

Gen John C. Meyer
May 1972 - Jul 1974

Gen Bruce K. Holloway
Aug 1968 - Apr 1972

The BIG I has been read by SAC crewmembers since October 1970 when Maj R. R. Brown's article on the use of vision restrictive devices first appeared. For nearly ten years, the "instrument flying word" has been passed along by 1CEVG to SAC aviators. We at Combat Crew add our special "thanks" to the authors who have provided over 100 articles to our oldest continuous standard feature.

BIG
INSTRUMENT

Reference Ground Speed
WIND SHEAR: PART 4

Capt Thome Walters

The last two articles in this wind shear series have dealt with the mechanics of wind shear — how the aircraft reacts, what the pilot sees, power requirements, and short versus long landing. In this final article, we'll explain a simple technique you can use to solve the wind shear problem: reference ground speed.

It helps to be *aware* that a shear might exist. Weather briefings and PIREPs can key a watchful eye. But awareness, by itself, does not tell a pilot just what to expect. What the pilot needs is some method of comparing the runway surface wind with the wind at the start of the approach. That is what reference ground speed does. It's a simple indicated/ground speed comparison.

How to Compute — Reference ground speed is the ground speed you expect to have after you apply the reported runway surface wind. If your planned indicated for an approach is 135 knots, and you have a 10 knot headwind reported, your reference ground speed would be 125 knots. If you were landing with a four knot tailwind, reference ground speed would be 139 knots. The number is easy to compute. In fact, it takes longer to say "reference ground speed" than it takes to figure one.

How to Use — When you begin an approach, compare actual ground speed with reference ground speed. If they differ, a wind change or shear will occur during the approach.

Look at figure 1. Winds increase 15 knots in this case. If it happened quickly — a shear — what would the pilot see? The answer is a 15 knot increase in indicated airspeed; the aircraft would pitch up slightly and go above the glide path.

This is an example of the increasing headwind shear. In Part 3, we also called it an Increasing Performance situation. This term is more useful, so we'll use it and its counterpart, Decreasing Performance, from here on. Note this key point from figure 1: in an Increasing Performance shear, actual ground speed is higher than reference ground speed.

Now look at figure 2. Reference ground speed is 130 knots. But actual ground speed is 110 knots when you begin the approach. If the drop occurs suddenly you lose 20 knots of indicated airspeed. The key point for a Decreasing Performance shear: actual ground speed is *lower* than reference ground speed.

We'll put each situation into a table format for you:

Increasing Performance Shear
- Actual ground speed *higher* than reference ground speed
- If shear exists, anticipate
  - 1 — Increase in indicated up to the difference between actual and reference ground speed
  - 2 — Going high on glide path

Decreasing Performance Shear
- Actual groundspeed *lower* than reference ground speed.
- If shear exists, anticipate
  - 1 — Drop in indicated up to the difference between actual and reference ground speed
  - 2 — Going below glide path

Energy Management

If the term's new to you, it's been around for awhile, but has been used mostly by fighter types talking air-to-air. We can use it to explain an important point about wind shear.

The Decreasing Performance shear is the most dangerous. If you lose enough indicated airspeed fast enough, you stop logging flying time. Can you safely fly

Figure 1

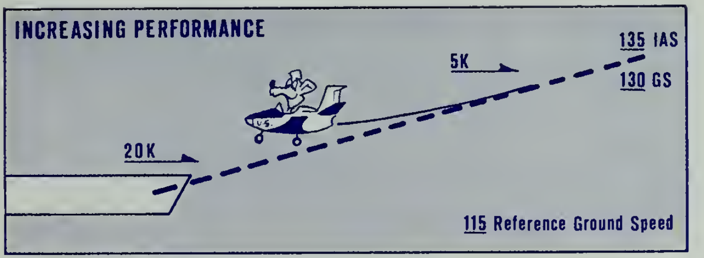
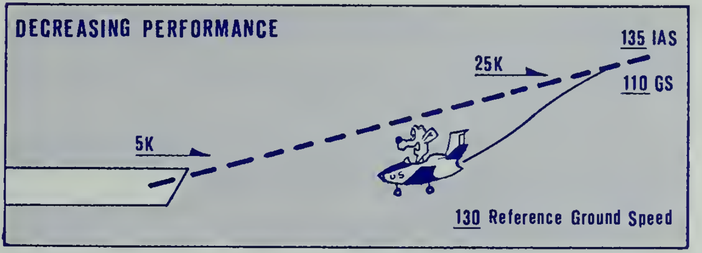


Figure 2



through a decreasing performance shear? The answer is yes, if you have enough energy.

An aircraft can gain kinetic energy by 1 or 3 ways:

1 — Push the throttles up. The problem with this option is spool-up time. If you lose 20-30 knots of indicated very close to the ground, the engines won't pull you through.

2 — Trade potential energy (altitude) for kinetic energy (airspeed). Again, close to the ground, this option is not what headquarters would call a "viable alternative."

3 — Pad the airspeed. If you add 20 knots to approach airspeed because ground speed is 20 knots lower than reference ground speed, you have just made a one-time deposit in the bank. If a 20 knot shear exists, and you drop a quick 20 knots of indicated airspeed, where does that leave you? On speed, if you planned for it and added 20 knots.

That's called energy management. You just guaranteed yourself enough energy to fly through the problem, if it exists.

NO SHEAR

What does reference ground speed do for me if no shear exists, if the wind changes gradually?

The answer is, it tells you what changes to expect during the approach. If the wind increases or decreases gradually, you can anticipate changing your power and rate of descent during approach.

At the beginning of this series, we pointed out that large shears are rare. Small shears and gradual changes are very common. The most significant benefit we will see from the reference ground speed technique is improved instrument approaches day in and out. Instead of flying one standard approach for every conceivable wind, you'll anticipate power and descent rates for the actual wind. When you get ahead of the game, it sure cuts the workload down.

WIND SHEAR TECHNIQUES

Here are our recommended techniques and parameters you might use to handle the problem of wind shear.

Takeoff

- Takeoff into an increasing headwind shear is no problem — performance is increasing.
- If you suspect a decreasing performance shear — a strong tailwind above the ground, for example — delay takeoff, if possible.
- If you takeoff in a decreasing performance situation, pad rotate and climbout speeds, runway and obstacles permitting.
- If unable, let the airspeed build as soon as possible after takeoff and delay flap retraction until the upper limits of the flap retraction schedule.

Landing

Increasing Performance - Ground speed higher than reference ground speed.

- Do not pad approach speed. If shear exists, indicated airspeed and lift increase.
- If shear is close to the ground (past decision height) it might cause a long, hot landing. Go around if unable to land in touchdown zone.
- If shear is encountered at a higher altitude, resist the temptation to make a large power reduction. Accept higher indicated and use pitch and trim to get back to glide path, if possible. But avoid large trim changes.
- Avoid high descent rates with the engines spooled down. If you cannot restabilize on glide path, go around.

Decreasing Performance — Ground speed lower than reference ground speed.

- Pad approach speed by the amount of the sheer potential.
- Be aware of stopping distance. This should rarely be a limiting factor, considering the length of SAC runways and normal landing weights.
- Monitor ground speed. If it increases gradually (no shear exists), then anticipate the need to reduce power and increase descent rate in the final part of the approach.
- Avoid high descent rates with engines spooled down.
- If a go around is necessary, use full thrust. Simulator tests show pilots usually add less power than they think they did. Don't be shy.

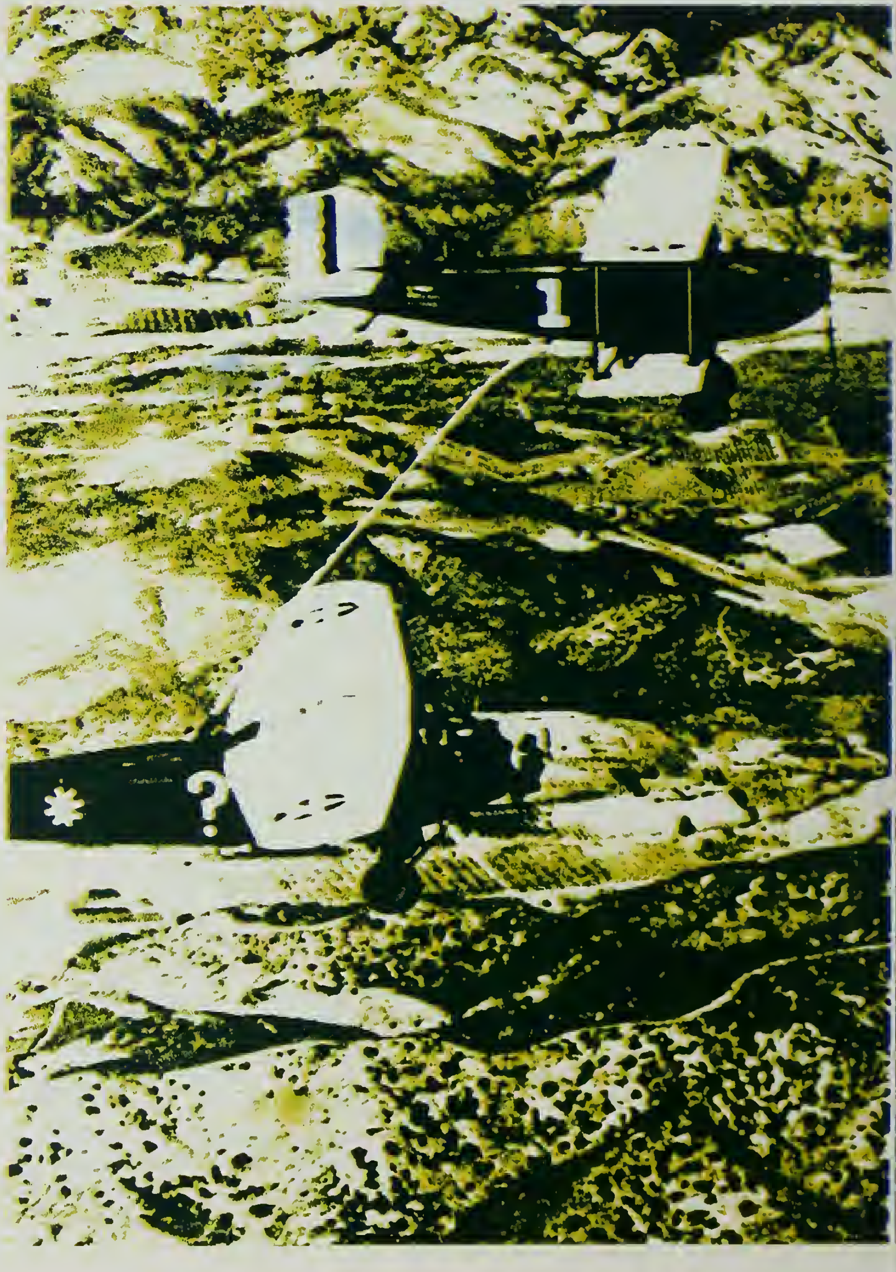
Remember, a superior pilot is one who uses superior judgment to stay out of situations that require superior skill to recover!

Air Refueling
the need

Lt Col Clifton J. Jester
376 SW, Kadena AFB

The idea of refueling an aircraft in-flight was pioneered many years ago by a few brave, industrious aviators who were looking beyond the present into the future. It would require many years of experimentation before air refueling would become a practical military maneuver that would greatly expand the horizons of a modern military Air Force. Like many other aviation inventions, the idea originated from a sincere belief in the future of manned flight and was supported by a determination to develop a fledgling Air Force to the fullest. Since that time, in-flight refueling has become a common occurence and an extremely effective instrument capable of supporting the military and political objectives of the National Command Authority.

The mere thought of providing a refueling platform in space has drastically altered the concept of aerospace power and realistically enhanced the military capability to support National policy decisions. The development of an in-flight refueling capability can be identified as one of the significant milestones in aviation history, and one that has had far reaching consequences. It is truly the one development that has reduced the size of the world and identified the United States Air Force as a global power. The range of U.S. military aircraft has almost become infinite: no longer are aircraft restricted by ground fuel loads; no



longer is the U.S. restricted by the whims of foreign nationals who unexpectantly decide that world politics are too unstable for friendly relations; and no longer are military aircraft viewed solely as weapons of war, but as dynamic extensions of national policy.

The air refueling procedures we accomplish daily, and take for granted, would have saved numerous lives just a few years ago. Many crew members were lost during World War II when fighter escorts were unable to accompany bombers to the target: the lone formations of bomb ladened aircraft were easy prey for enemy fighters. Initially, the bombers employed evasive maneuvers, only to discover that bombs were being scattered all over the country side, and the ratio between target damage and aircraft loss was totally unacceptable. General LeMay demanded strict air discipline from his crews and forbid all forms of evasive action, thereby, concentrating his forces to improve both bombing accuracy and defensive firepower. The limited capabilities of those early aircraft could be used to predict future offensive operations. The allied offensive in Europe closely paralleled the strategic air war against enemy industrial targets and support activity. General MacArthur's drive through the Pacific depended, in many cases, on the availability of air fields for General Kenney's Air Force. The success of the Pacific campaign required massive air support and often telegraphed the American advance towards the Japanese homeland.

During the Vietnamese conflict, most of the air tactical limitations of past wars were negated by the in-flight refueling capabilities of the KC-135. Tactical aircraft were allowed to operate with minimum fuel loads while heavily ladened with offensive ordnances. Their destructive capabilities were greatly enhanced by onloading the fuel necessary to complete all assigned missions against targets once considered safe havens for enemy concentrations. Range and endurance were no longer factors to be used as predictors of probable targets. The combination of strike aircraft and tankers opened up whole areas for offensive operations and also provided the means for supporting the requirements for protective escorts and when required, search and rescue efforts. In many instances, the tankers were again waiting as the receivers came off target, ready to satisfy all fuel requirements for a safe return to home station.

American military forces at the perimeter of the free world are dependent upon the quick reaction capabilities of the U.S. military structure. Long term resource requirements will be satisfied, primarily, by ocean vessels, but crises situations dramatically expose the vulnerability of a surface-based resupply system. Allied reactions to enemy aggression will require massive, strategic airlift support from the United States. Virtually every American military and industrial complex is within range of a world trouble-area via the tanker. The capability to win, or prevent a loss, whichever is desired, depends upon our ability to blunt the initial blitzkrieg and contain the aggressors until American forces can be upgraded for sustained combat activity.

It was been vividly demonstrated during the past few years that our determination to assist friendly nations is not a unilateral decision. Consequently, the United States has been forced to design or retro-fit all aircraft with an in-flight air refueling capability. The aviators and leaders of yester-year would have gladly welcomed our modern air refueling procedures. The tremendous growth of air power has forced the integration of air refueling into all areas of strategic, tactical, conventional, and nuclear operations. The communist world is keenly aware that every major target complex is within striking distance of United States manned aircraft. We are limited only by human endurance and imagination.

The solutions for tomorrow's problems will only be restricted by our enthusiasm, imagination, and daring. The air refueling procedures developed and refined by the Strategic Air Command have become a vital and dependable segment of National policy. United States strategic and tactical aircraft may be deployed, no-notice, to any location in the world in a vivid demonstration of National resolve. In the interest of peace, the National Command Authority must be able to convincingly display the potential of our military resources to strengthen and enforce national objectives. It is a solemn pledge that peace is truly our profession.

DEBRIEF

30 Years

SAC CHIEFS OF SAFETY

Nov 1950 - May 1953	Col Frank W. Ellis
Jun 1953 - Aug 1956	Col C. J. Cochrane
Sep 1956 - Apr 1959	Col Ralph W. Stanley
May 1959 - Sep 1960	Col Woodrow P Swancutt
Nov 1960 - Sep 1961	Col Elkins Read, Jr
Oct 1961 - Apr 1962	Col B. B. Klose
May 1962 - Aug 1963	Col D. P. Wood
Sep 1963 - Jan 1965	Col George J. Eade
Feb 1965 - Jun 1966	Col Paul N. Bacalis
Jul 1966 - Aug 1969	Col Clifton Pyle
Sep 1969 - Feb 1971	Col William H. Hill
Mar 1971 - Apr 1972	Col William P. Armstrong
May 1972 - Jul 1975	Col Winston E. Moore
Aug 1975 - Aug 1977	Col Jesse S. Hocker
Sep 1977 - Jul 1978	Col John R. Shipe
Aug 1978 - Aug 1979	Col Burr V. Miller, Jr
Sep 1979 - present	Col Richard A. Patrick

30 Years Ago . . . June 1950 . . .

- In a letter to all pilots of the Strategic Air Command, Gen Curtis E. Lemay stated his feelings concerning safety: "As long as airplanes are flown by human beings, we are going to have accidents. Some accidents will be unavoidable. However, by doing everything possible to reduce those caused through human error, we can keep our accidents down to a minimum."
- Among fighter pilots there is an expectancy that they will collide with a severed tow target once in every 25 missions. One target out of every 50 missions is cut loose . . .
- What is it like to fly the world's largest bomber, the B-36? Capt John Handley from the 9th Bomb Squadron, Carswell AFB, explains, "the first thing that strikes you is its hugeness . . . on a training flight we will be airborne 25 hours . . . we do need more space for maneuvering . . . after flying 5000 miles you are pretty tired."
- B-47 Training. One of the most outstanding training developments in SAC is the B-47 program.
- Crews of the 306th Group will be trained so that they can train crews of other groups.
- A new giant of the skies will soon be seen in SAC airlift — the C-124 Globemaster.

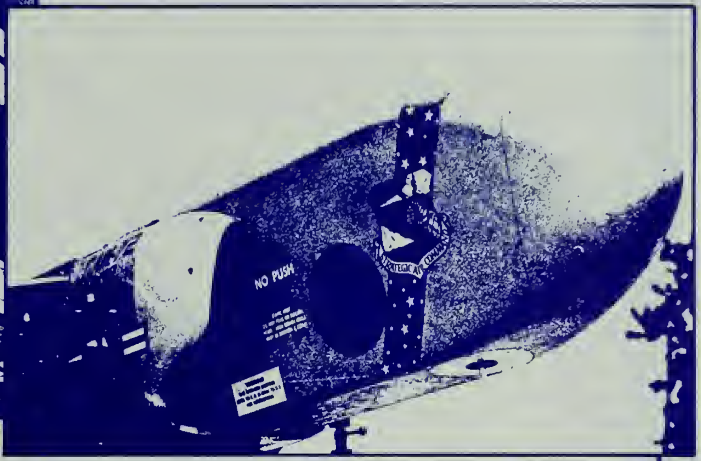
20 Years Ago . . . June 1960 . . .

- The B-58, Hustler, training program is now getting started. Here is what the bird is like . . . The B-58 is small as we think of bombers . . . It has a flight crew of three . . . the first thing that will strike old pros is the absence of a control wheel. In its place is a stick. The flight characteristics are excellent, and response to controls is positive and instantaneous . . . a unique feature is control stick steering . . . flight range can be lost due to improper CG management . . . For the first time in Air Force history, a flight simulator rather than a system trainer is used for crew instruction.
- In an article entitled, "T is for Thunderstorms" pilots were reminded that thunderstorms are very unpredictable, present a major flying hazard and should be avoided.
- "ILS and the B-52" by D. B. Thompson, a Boeing test pilot, gave hints for pilots on how to fly the automatic ILS with the autopilot. This system affords the pilot " a little something extra."
- Capt Samuel Pizzo in an article, "Safety COBETKNN Style," describes his flight on a Soviet TU 114 during a visit by Premier Khrushchev to the United States.
- The 93d CSG, Castle AFB, was at the top of the Hall of Fame with over nine years of mishap free flying.

10 Years Ago . . . June 1970 . . .

- In the editorial by Gen David C. Jones, then 2d Air Force commander, he states, "the interest rate is going up. I refer not to interest as in money, but interest in you, the combat crewmember; in your status, in your living, working and flying conditions. This interest takes many forms and makes some reciprocal demands on you."
- Olympic Arena 70 saw the Blanchard Trophy going to the 44th SMW, Ellsworth AFB.
- A 1st CEG article discussed the KC-135, AN/APN-59 airborne radar and its use in weather avoidance.
- The CINCSAC Missile Wing of the Year award went to the 341st SMW, Malmstrom AFB.
- The 43d SW, Andersen AFB, was at the top of the Hall of Fame with 16 years mishap free.
- One of the B-52 navigator's headaches, the AGM-28 blinking A/N No-Go light, was addressed in an article by the North American Rockwell Corp. tech rep.
- A small group of tanker pilots saw the value in a FD-109 integrated dual flight director system mockup being rotated from base to base. They built their own.

Editor's note. Material extracted from "From SNARK to SRAM: A pictorial History of Strategic Air Command Missiles," by Dr. E. Michael Del Papa, Office of Historian, HQ SAC, Offutt AFB NE, 21 Mar 76.



SAC Air Launched Missiles

The growing sophistication of the SAC bomber fleet in the fifties was being paralleled by improvements in Soviet air defenses. This led to SAC's employment of the air launched guided missile in the sixties. These missiles would penetrate and either destroy enemy targets or provide deception for the force.

Hound Dog

The Hound Dog (AGM-28) program was begun in the 1956 and the first delivery was made in 1959 to the 4135 SW, Eglin AFB. Twenty-nine B-52 squadrons were fully operational by 1963. This missile could deliver a nuclear weapon on targets up to 500 miles from launch and after flying a variety of high and low options. Two missiles were carried under the wing of the B-52.

The Hound Dog would be the primary air launched strike missile until the mid-seventies. It was primarily carried by the B-52G and H, however, it also was deployed in some B-52D units.

The Quail

The concept for a decoy missile predated the air launched strike missile. The Quail program began in 1952 when SAC submitted a requirement for a decoy missile. The first production model, however, was not delivered until 13 Sep 1960 to the 4135 SW, Eglin AFB.

The Quail (ADM-20) was specifically designed to create the radar image of the B-52. Several were carried for possible launch. The missile, once launched, could make one speed change and two turns in accomplishing its preprogrammed mission of deception. The Quail which was fully operational on 15 April 1962 had the distinction of being the only dedicated decoy missile developed by the USAF.

SRAM

The Short Range Attack Missile (SRAM) was developed for use by both the B-52G/H and FB-111A. Several of these nuclear loaded missiles could be carried externally and internally by SAC bombers.

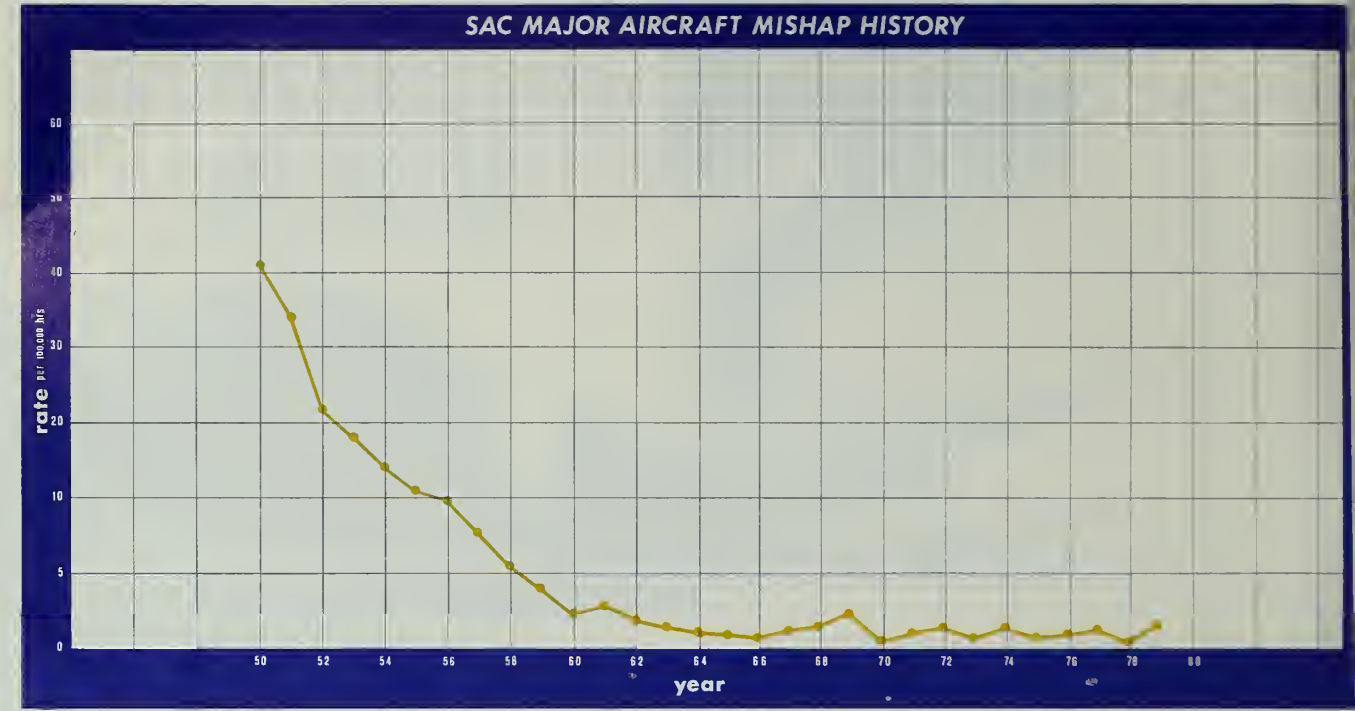
The SRAM (AGM-69A) program began in 1963 with SAC's submission of a requirement of need. The first SRAM was delivered on 1 March 1972 to the 42 BMW, Loring AFB. The 509 BMW, Pease AFB, was the first FB-111 unit to receive the missile. As SAC entered the decade of the eighties all B-52 G/H and FB-111 units were equipped with SRAM.

Missiles of the Future

In June 1977, the decision to not go into production of the B-1 bomber was announced. At the same time the President directed the continued development and deployment of a new air launched cruise missile. The ALCM or Cruise missile would be the missile of the future.

The cruise missile would be launched from a stand off position, penetrate enemy air defenses at low altitude, and strike targets deep in the enemy's heartland. The first B-52G units are scheduled to receive these missiles in the near future.

SAC planners see other new air launched missiles in the future for SAC. The need first recognized in the early fifties remains just as valid in the eighties.



2000 IN RED FLAG

A crew from the 7th BMW, Carswell, recently completed SAC's 2000th Red Flag mission. Capt Bernard M. Mudd and his crew R-32 assigned to the 20th Bomb Squadron at Carswell flew the mission in the proximity of Nellis AFB.

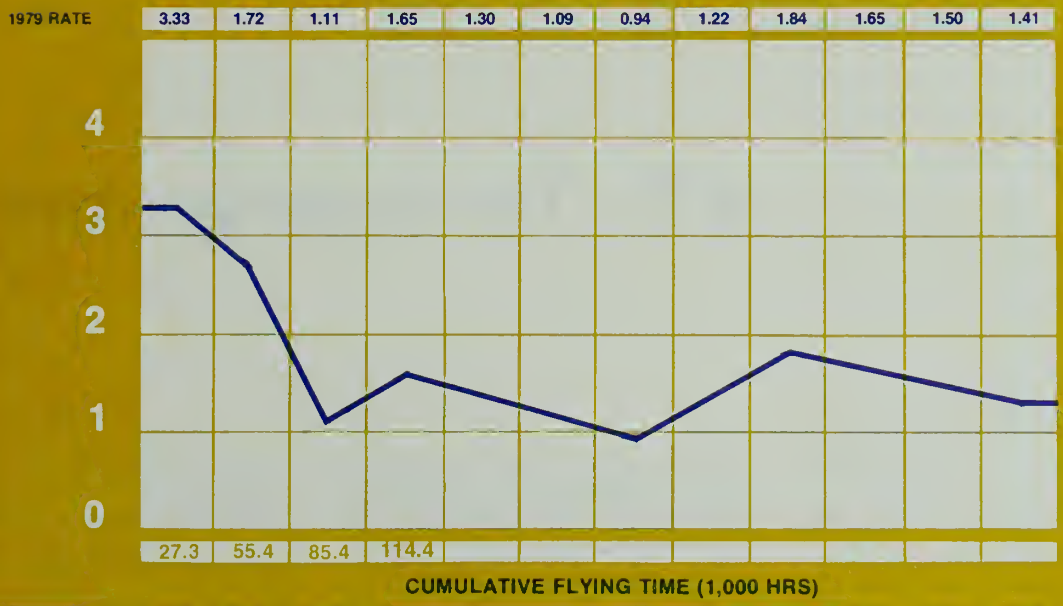
Red Flag is a joint services exercise bringing together components of SAC, TAC, MAC and elements of the Army, Navy, Marine Corps and Reserves. The exercises test the capabilities of people and equipment in realistic scenarios.

The first SAC Red Flag mission was flown on 10 April 1976. The bomb wing participating in this first mission — you guessed it — the 7th BMW.

Crew R-32 is congratulated upon return from their Red Flag mission. From left to right: Col Frank R. Wink, 7BMW/DO; Lt Col Isaak, 20BMS/CC; Capt Bernard Mudd, pilot; SSgt Richard McColly, gunner; 1Lt Mark Cornwell, EWO; 2Lt James Stall, navigator; Capt Michael Schauf, copilot; Capt John Mullenax, RN; and Col Billy F. Price, ADO.

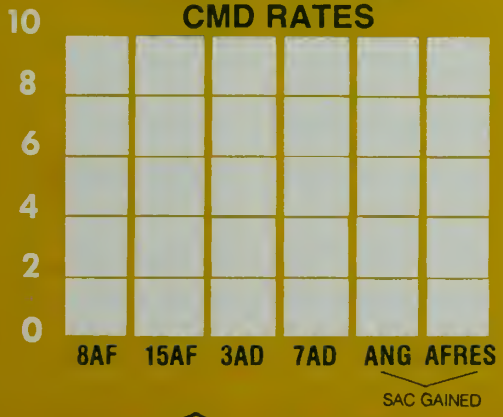
1980 Flying Safety Rate

SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1979	1	0	0	1	0	0	0	1	2	0	0	0
1980	0	0	0	0	0							

1980 SUBORDINATE CMD RATES



LEGEND ╱╲ = 1979 RATE (SAC)
+ = ANG
• = AFRES

MISHAP STATUS

ACE TOPICS

Beginning with a test program at Barksdale in October 1975, SAC copilots began flying in a new program called ACE (Accelerated Copilot Enrichment). The following year, T-38s and T-37s began arriving at SAC bases on loan from ATC to support the program. SAC would own only the T-38s at Fairchild and Beale. The latter base had been using the T-38s for pilot proficiency of U-2 and SR-71 crewmembers prior to the ACE program. The following article, written by an ACE pilot, gives an account of the program's value.

ACE: Developing Aircraft

Capt George E. Walrond
380 BMW, Plattsburgh AFB

I was stationed at Plattsburgh for six months before the Accelerated Copilot Enrichment (ACE) program was instituted here. After months of flying the KC-135 and never seeing over 30° of bank, I was pretty excited over the prospects of getting my hands on a fully aerobatic aircraft. I felt at the time that this would have to be one of the best flying deals in the Air Force. After a little over two years of flying the T-37 in ACE, I still feel the same excitement.

The first impression I had about the T-37 after being out of it for over 13 months was how easy the aircraft was to fly. However, I soon discovered that it was somewhat difficult to fly well. A little out of trim on the elevator or ailerons and you could easily find yourself off altitude and heading during a momentary distraction. The rate of deviation was much quicker than the tanker. After a couple of flights I was forced to review AFM 51-37 for the basics of the control and performance concepts of flying. I must recommend to all copilots just starting out in ACE to hit the books hard from the start. Though the airplane and its systems may seem simple compared to your primary aircraft, there are some little and subtle things which may get you into trouble. It is here that I must make some observations about the differences between operationally flying the KC-135 and the flying taught by the ATC IPs.

When flying the tanker, some of our parameters are different. We have minimum airspeed criteria based on configuration and gross weight. The maximum airspeeds are usually governed by regulations such as no greater than 200 KIAS in an airport traffic area or no greater than 250 KIAS below 10,000 feet. In some cases, this gives the pilot a speed range of 60 to 100 knots depending on the pattern being accomplished. When I started flying the T-37, I found the ACE instructors were emphatic about holding target airspeeds such as 110 KIAS in the final turn. At first, I was somewhat annoyed at the IP's persistence for maintaining rigid standards. However, I began to realize two things. First, they are highly competent instructors and secondly, their flying standards had been so ingrained that they had become habitual. The greatest benefit of these strong habit patterns became noticeable during periods of high cockpit workloads. I observed the instructors handling a lot of things such as copying new clearances, running checklists and flying approaches while at the same time maintaining precise aircraft control. After seeing this a few times, I decided there must be something to maintaining rigid standards, and I started forcing myself to become the same type of precision pilot. I am now very conscious in both the T-37 and the KC-135 of control and performance and I work very hard at selecting and maintaining target airspeeds, vertical velocities and pitch. I feel this keeps me thinking ahead of the aircraft and I am more aware of the total flying environment. I find myself flying the KC-135 with better control and at

Commanders

the same time catching radio calls, not shooting through altitudes and headings, and hearing a lot less "watch your altitude" and "watch your heading" from the navigator.

Probably one of the most positive aspects of ACE is the pure hands-on flying opportunity. There is no autopilot or flight director system to keep you on altitude or heading. I have been able to transfer this awareness to the KC-135, making me better able to assist the rest of the crew during every phase of a tanker flight. For example, when running a rendezvous I find myself more aware of what is going on at each crew position as well as being able to mentally picture the receiver's position. If the navigator's system deteriorates I can quickly help out using the pilot's nav aids or get center assistance.

Having two copilots flying together in ACE gives both a chance to assume the roles of aircraft commander and copilot. This is excellent training for learning to command as well as keeping tabs on the other crewmember. I find myself doing a lot more safety checks in both aircraft and being more defensive in my flying. The idea of being fully responsible for the aircraft is one of the things that matures the ACE pilot quickly.

Cross country flying is another of the spillover benefits of ACE. I have flown to just about every Air Force base east of the Mississippi and quite a few in the west. In addition, I have been able to go to some metropolitan airports. This has opened my eyes to a new world of flying. The unlimited variety of approaches flown has provided a vast wealth of experience. I have had to keep up on low altitude procedures and publications such as the Airman's Informational Manual. Consequently, I feel that I now provide invaluable assistance to my tanker crew when we are required to go into strange fields.

The variety of training given to ACE pilots includes aerobatic flying, spins, contact flying and formation flying. This versatile background of experience gives the Air Force a product that can be easily cross-trained into other systems if needed. Formation proficiency has paid off in two incidents at Plattsburgh. In the first a T-37 flew chase on a T-39 with gear problems and in the second, a T-37 joined a light aircraft who was lost and gave him navigational assistance.

Even though most of the training received in ACE transfers to the KC-135, there are two disparities which should be addressed. The first involves the aircraft elevator trim. The T-37 is trimmed by displacing the stick (elevator) and trimming the forces to hold the stick and elevator in the desired position. The trim motor on the KC-135 turns a screw which moves the entire leading edge of the stabilizer, not the elevator. Therefore, the yoke must be allowed to return to the neutral position as the aircraft is trimmed. If trimming the KC-135 is attempted with the yoke in other than the neutral position an actual out of trim situation may occur. The second and most obvious difference is the flare picture. I compensate for the difference between aircraft by making a mental picture of my height above the ground while taxiing out. Whatever your technique, make sure you get the correct flare picture especially if you fly the T-37 a great deal more than you fly the tanker. Failure to consider the difference in aircraft could result in your trying to flare the tanker late.

As you can see I am very highly motivated over the ACE program. Emotion aside though, the practical benefits of ACE are the massive amounts of spillover training from the T-37 to the KC-135, the wealth of experience and responsibility gained from cross country flying and the variety of training in contact, formation and instrument flying. In relative terms this training is inexpensive and cost effective. The end product is a more skilled aircraft commander which makes it definitely worth while. From my own experience I have the ACE program a big thumbs up.

SECOND TIME AROUND

Continued from Page 9

Crewmembers of the historical lead ship B-52 include, kneeling from L-R: Maj William H. Thurston, AC; Capt Charles M. Schencke, nav; and Capt Wayne M. Hesser, RN. Standing, from left: Capt Corrie J. Kundert, EWO; SSgt Samuel J. Carmona, gunner; Capt Steven C. Nunn, CP; and Capt Richard M. Zimmerman, IP. At far left is Col Robert Rodriguez, 410th BMW/DO and at far right is Col Marion F. Tidwell, commander, 410th BMW.

plan and asked us to refile in the air.

We also had to improvise some formation and air refueling procedures. For example, since no one outside the CONUS or Canada would give us an altitude block, we flew nonstandard formation with two-mile, 200-foot separation. And when our second set of tankers informed us that we could not refuel over the European landmass and only half the onload was complete due to tailwinds, we did the only logical thing: We reversed course and headed west to complete the refueling.

We learned to appreciate KC-135 crews when we arrived at our fourth ARCP in the Indian Ocean with only enough gas to get to Diego Garcia. Our seven tankers arrived on time to offload 210,000 pounds of JP-5 apiece. In fact, every tanker we flew against on this mission was on time, and each did everything possible to insure that we had enough time. Several provided increased offloads without hesitation when we arrived with less than our forecast fuel.

The highlight of the mission, of course, was our activity in the Indian Ocean with the Navy. We located the lead naval ship using TACAN, and established radio and radar contact. A flight of A-7s was launched to escort us, and we were cleared to descend. After rendezvous with the fighters, we were each vectored to the vessels we were to observe and were asked to confirm the sighting. Once we had each vessel visually, we advised the lead U.S. ship and proceeded to conduct photography. Upon completion we made a low pass over the aircraft carrier Nimitz with our escorts and then continued our journey, postmission analysis of our photography showed that the low level portion of the mission was a success.

Physiologically we learned a lot about ourselves. Sleep was difficult at best during the first 30 hours due to the activities required to complete the mission. Having been briefed on the importance of not changing our normal dietary habits, we rigidly adhered to a schedule of regular meals and drank at least the minimum amount of liquids. Combined with short naps and the pumping of our adrenalin, this seemed to minimize the fatigue problem associated with the heavy-weight refuelings at the 21 and 29 hour points. The last 12 hours saw the majority of our activity behind us and we were each able to get some solid sleep prior to penetration and landing at 0250 and 0255 on 14 March.

We came to respect the old buff a little bit more. Her reliability was proven as the mission had been "OPS Normal" all the way. In 42.5 hours the only significant aircraft maintenance writeup was a malfunction of the AJN-8 heading system on one aircraft. In addition, the reliability of the SRAM for positioning was incredible. The aircraft were always shown to be within two miles of each other.

Reflecting on the mission, the observations we can make are: First, it was done safely. General Leavitt stressed safety above everything else. His words were, "I want the mission completed . . . and above all, I want it done safely."

Second, worldwide communications and international flight rules are things many of us in B-52 operations are inexperienced in. We need to be aware of the limitations of our equipment as we become more knowledgeable of procedures. Finally, we know that the B-52 and SAC aircrews can still hack long endurance missions. They can still fly half way around the world, strike assigned targets, and return home to do it again.

For 30 years, Combat Crew has recognized SAC crewmembers and maintenance people who have demonstrated professionalism. Thousands of dedicated individuals have aided the command in some way, thus gaining the distinction of being truly SAC's . . .

PROFESSIONAL PERFORMERS

MAINTENANCE NCO OF THE YEAR

TSgt Thomas O. Droelle, 91st SMW, Minot AFB, has been selected as the Strategic Air Command Maintenance NCO of the Year for 1979. His outstanding technical compliance, initiative, and leadership abilities have been enormous assets to the overall missile maintenance effort as well as the total training program at Minot. Because of his exceptional success with facilities maintenance team training, his responsibilities were expanded to include the recurring proficiency training program for the electro mechanical, site security maintenance, and mechanical maintenance teams. TSgt Droelle is a dedicated noncommissioned officer and a valuable asset to the United States Air Force.

HEADS UP

Lt Col Paul M. Matthews, pilot, 509th BMW, Pease AFB.

Capt James D. Browning, navigator, 509th BMW, Pease AFB.

While flying an FB-111A on their first low approach, Lt Col Matthews, pilot, and Capt Browning, navigator, experienced an engine fire which filled the cockpit with smoke. The crew reacted quickly and correctly. They immediately shut down the burning right engine and declared an emergency. They realized the fire which continued to burn jeopardized their continued flight and that civilian populace could be injured in an ejection attempt. The crew, therefore, landed the burning aircraft, brought it to a halt, and immediately ground egressed. Fire fighters were able to put out the fire. The crew's swift actions thus saved a valuable asset.

MISSILE CREWS

MINUTEMAN CREW R-013, 351 SMW, Whiteman AFB: MCCC Capt John S. Henry, and DMCCC Capt David H. Boulian.

TITAN CREW E-052, 381 SMW, McConnell AFB: MCCC Capt Jeffrey S. Heussner, DMCCC Maj Burton L. Maxwell, MSAT Amn Theodore F. Strelevitz, and MFT A1C Michael T. Baierl.

The Hall of Fame dates back to January 1951 when recognition of bases which flew major or minor accident free for a month was featured. The listing in that issue included Offutt, Barksdale, MacDill, Rapid City, Walker, Castle, Travis, Fairchild and Ramey – all were accident free in November 1950.

The Hall of Fame kept to this early format until March 1955 when recognition began for bases accident free for one year or more. In May 1974, the criteria to gain listing in the Hall was changed to the present four years of Class A mishap free performance. Combat Crew proudly recogizes and salutes units which have earned their place in the Hall of Fame.

TACTICAL FLYING

OVER TWENTY-FOUR YEARS	
170 AREFG, McGuire (NJANG)	None
OVER TWENTY-TWO YEARS	
171 AREFW, Greater Pittsburgh (PAANG)	Mar '58
OVER TWENTY-ONE YEARS	
157 AREFG, Pease (NHANG)	June '58
97 BMW, Blytheville	Aug '58
940 AREFG, Mather (USAFR)	May '59
OVER TWENTY YEARS	
307 AREFG, Travis	Sep '59
OVER NINETEEN YEARS	
151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61
OVER EIGHTEEN YEARS	
134 AREFG, McGhee Tyson (TNANG)	Aug '61
11 SG, Fairford	Feb '62
OVER SEVENTEEN YEARS	
340 AREFG, Altus	Jun '62
96 BMW, Dyess	Aug '62
OVER SIXTEEN YEARS	
19 BMW, Robins	Aug '63
OVER FIFTEEN YEARS	
160 AREFG, Rickenbacker (OHANG)	Dec '64
OVER FOURTEEN YEARS	
320 BMW, Mather	Jul '65
OVER THIRTEEN YEARS	
452 AREFW, March (USAFR)	Sep '66
92 BMW, Fairchild	Feb '67
OVER TWELVE YEARS	
55 SRW, Offutt	Jul '67
2 BMW, Barksdale	Aug '67
OVER ELEVEN YEARS	
5 BMW, Minot	Feb '69
OVER TEN YEARS	
42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69
28 BMW, Ellsworth	May '70
OVER EIGHT YEARS	
7 BMW, Carswell	Mar '72
101 AREFW, Bangor (MEANG)	Mar '72
306 SW, Mildenhall	Apr '72
416 BMW, Griffiss	May '72
OVER SEVEN YEARS	
305 AREFW, Grissom	Aug '72
379 BMW, Wurtsmith	Apr '73
OVER SIX YEARS	
931 AREFG, Grissom (USAFR)	Feb '74
384 AREFW, McConnell	Mar '74
189 AREFG, Little Rock (ARANG)	May '74
OVER FIVE YEARS	
43 SW, Andersen	Dec '74
OVER FOUR YEARS	
68 BMW, Seymour Johnson	Sep '75
6 SW, Eielson	Dec '75

ICBM

OVER FIFTEEN YEARS	
1 STRAD, Vandenberg	Sep '64
OVER FOURTEEN YEARS	
308 SMW, Little Rock	Aug '65
OVER TEN YEARS	
341 SMW, Malmstrom	Apr '70
OVER SIX YEARS	
390 SMW, Davis-Monthan	Jul '73
OVER FIVE YEARS	
351 SMW, Whiteman	Oct '74
91 SMW, Minot	Nov '74
OVER FOUR YEARS	
321 SMW, Grand Forks	Feb '76

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months.

HALL OF FAME

SAC SAFETY SCREEN

Selection of crews for the SAC Safety Screen began in January 1957 when five crews were selected from each numbered air force. Second Air Force crews were from MacDill, Homestead, Tinker, Carswell and Barksdale; 8AF crews were from Lincoln, Lockbourne and Westover; and 15AF crews represented Travis, Mountain Home, Walker, March and Ellsworth. Since then thousands of outstanding SAC crews have been honored in this manner. Combat Crew continues this tradition with this month's selection for the . . .

SAC SAFETY SCREEN

90 SMW, F. E. Warren Crew R-167: MCCC 1 Lt Brian E. Dieffenbach, DMCCC 2 Lt Bruce I. Silverstein
305 AREFW, Grissom Crew E-193P: P Capt Richard M. Thomas, CP Capt William L. Estelle, N Capt Donald K. Meyer, BO MSgt Jerry L. McGee
380 BMW, Plattsburgh Crew R-19: P Capt Steven H. Andrews, RN Capt Larry W. Blackwell
931 AREFG, Grissom (AFRes): P Capt Jon E. Mickley, CP Capt William A. McLoughlin, N Capt Thomas M. Graham, BO MSgt Thomas D. Williams
92 BMW, Fairchild Crew S-31: P Capt Bruce Erickson, CP Capt George S. Cataldo, RN Capt William H. Price, NN Capt David N. Shawhan, NE Capt Francis X. Baryza, Ag A1C Frank A. Auriti
100 AREFW, Beale Crew E-124: P Capt George H. Hartman, CP 1Lt Richard A. Shutt, N Capt Keith E. Salisbury, BO Sgt John M. Lobenberl
376 SW, Kadena Crew E-132: P Capt George C. Wall, CP 2Lt Charles D. Ford, NN 1Lt George W. Green, Jr, IS TSgt Michael W. Knapke
44 SMW, Ellsworth Crew E-080: MCCC Capt Robert I. Volavchek, DMCCC 2Lt Kent M. Blount
308 SMW, Little Rock Crew R-024: MCCC Capt Robert F. Hall, DMCCC 2Lt Eddie Cousins, Jr, MSAT SrA Mark S. Atwell, MFT A1C Lionel P. Guzman
321 SMW, Grand Forks Crew R-113: MCCC 1Lt John E. Babcock, Jr, DMCCC 2Lt Russell E. Medley, Jr
390 SMW, Davis Monthan Crew S-113: MCCC 1Lt Richard W. Holley, Jr, DMCCC 2Lt Thomas J. Whitehair, MSAT SSgt David A. Laytham, MFT Sgt Charles S. Watts, Jr
410 BMW, K I Sawyer Crew S-118: P Maj Lynn E. Guenther, CP 1Lt Dirk A. Werhane, N Capt Gary T. Modlin, BO Sgt Donald O. Frol
410 BMW, K I Sawyer Crew R-32: P Maj Robert C. Luther, CP Capt Ronald L. Cavendish, RN Capt Steven L. Schneid, N 1 Lt Stephen Ribuffo, EWO 1Lt Carl L. Cox, G A1C Charles A. Ingold IV
42 BMW, Loring Crew S-01: P Capt Normand A. Monastesse, CP Lt Timothy C. Jones, RN Capt Robert C. Muncy, N Lt Neil W. Taylor, EWO Capt Dennis E. Davis, G SSgt Robert H. Stone
42 BMW, Loring Crew E-111: P Capt John E. Haverstock, CP Lt John K. Meyers N Capt Kim M. Doxey, BO A1C Donald R. Cash
509 BMW, Pease Crew E-110: P Maj Robert S. Hauge, CP Capt Walter H. Adams, N Capt Rocco A. Latino, BO SrA James D. Jett
416BMW, Griffiss Crew E-18: P Maj Mattthew A. Riddell, CP Capt Dusty K. Kennemore, RN Capt Edward J. Walsh, NN Capt Victor M. Hernandez, Jr, EW Maj Stephen A. Leishman, AG SSgt Michael E. Wells
416 BMW, Griffis Crew E-117: FP Maj Yaroslav Kostal, CP 1Lt Gregory R. Breit, IN Capt John C. Richwine, BO SSgt Robert C. Bonner

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW AFR 127-2/SS1.*

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